United States Department of Agriculture

Natural Resources Conservation Service

In cooperation with United States Department of the Interior, Bureau of Indian Affairs and Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Soil Survey of Lewis and Nez Perce Counties, Idaho

How to Use This Soil Survey

General Soil Map

The general soil map, which is a color map, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

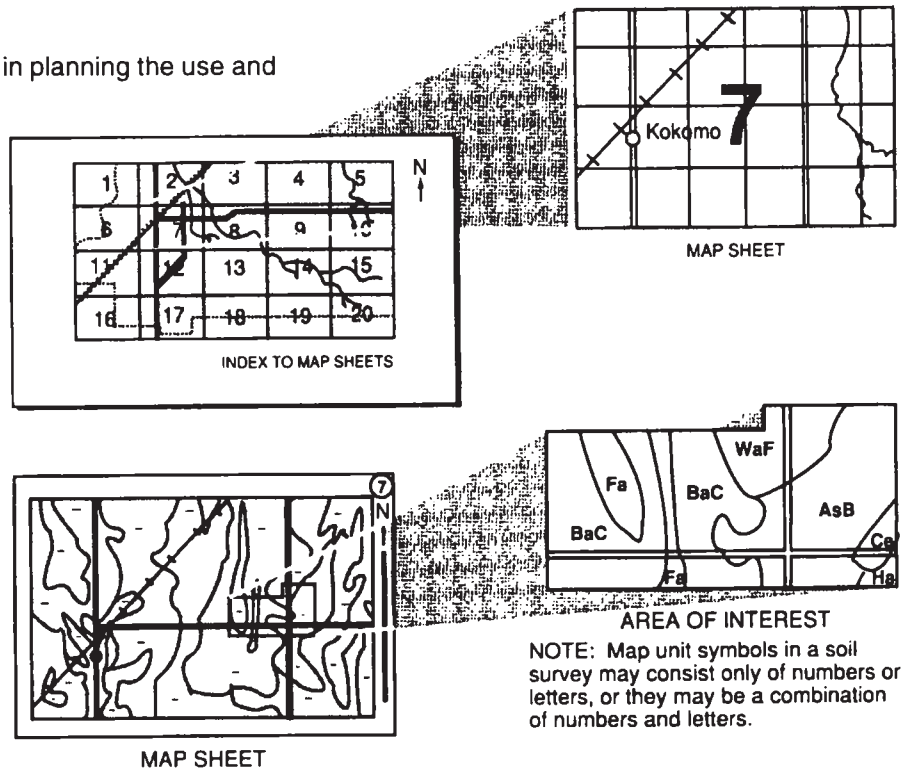
Detailed Soil Maps

The detailed soil maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Contents** shows which table has data on a specific land use for each detailed soil map unit. Also see the **Contents** for sections of this publication that may address your specific needs.



This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1992. Soil names and descriptions were approved in 1993. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1993. This survey was made cooperatively by the Natural Resources Conservation Service and the Bureau of Indian Affairs; Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission. The survey is part of the technical assistance furnished to the Lewis Soil Conservation District and the Nez Perce Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: Johnson and Labuck soils in timbered and cleared areas in foreground, and Uhlorn and Nez Perce soils in gently sloping areas of cropland in background. Distant hills are in Idaho County, Idaho.

Additional information about the Nation's natural resources is available on the Natural Resources Conservation Service home page on the World Wide Web. The address is http://www.nrcs.usda.gov (click on "Technical Resources").

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Foreword

This soil survey contains information that affects land use planning in this survey area. It contains predictions of soil behavior for selected land uses. The survey also highlights soil limitations, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

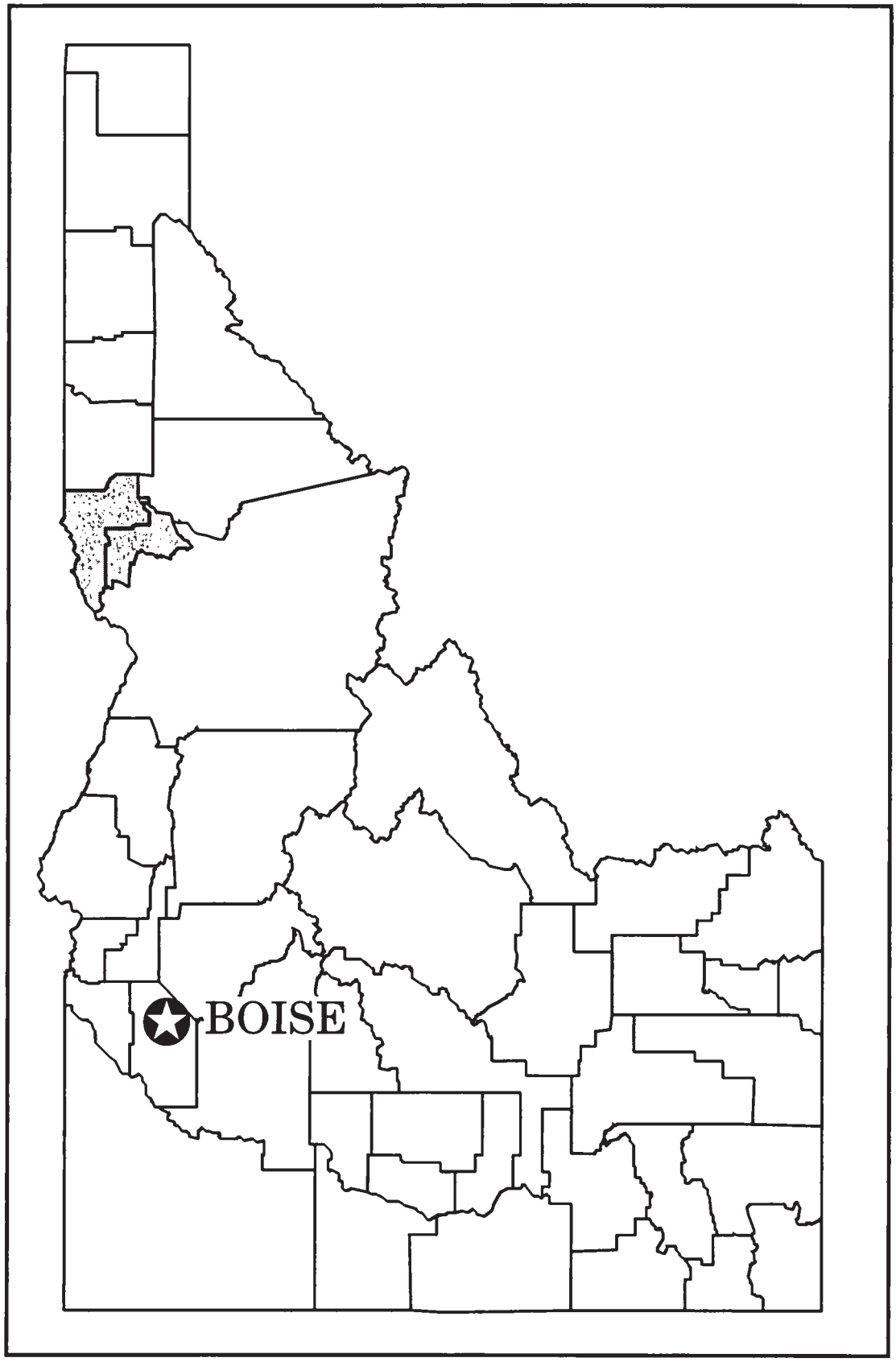
This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Richard Sims
State Conservationist
Natural Resources Conservation Service



Location of Lewis and Nez Perce Counties in Idaho.

Soil Survey of Lewis and Nez Perce Counties, Idaho

By Thomas W. Hahn, Natural Resources Conservation Service

Fieldwork by Thomas W. Hahn, Mark P. Keller, Peter F. Biggam, Jr., Larry E. Wright, P. Neil Peterson, Jr., Susanne M. Murphy, Pamela L. Keller, and Karl W. Hipple, Natural Resources Conservation Service

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
United States Department of the Interior, Bureau of Indian Affairs and Bureau of Land Management; University of Idaho, College of Agriculture; and Idaho Soil Conservation Commission

Lewis and Nez Perce Counties is in northern Idaho. It has a total area of 854,800 acres, or 1,336 square miles. Of this, 307,200 acres are in Lewis County and 547,600 acres are in Nez Perce County. The survey area is predominantly private land, but it includes some land administered by the State of Idaho, the Bureau of Land Management, and the Forest Service. A large part of the area is within the Nez Perce Indian Reservation. The Nez Perce Tribe owns 55,322 acres that are widely scattered within the reservation. The population of the survey area was 37,270 in 1990. The largest community is Lewiston, which had a population of 28,082 in 1990.

The survey area is characterized by rolling basalt plateaus dissected by deep canyons (fig. 1). The plateaus are mantled with deposits of loess that are tens of feet thick in places. Some of the plateaus gradually slope northward and westward toward the confluence of the Snake and Clearwater Rivers, forming an open valley around Lewiston (fig. 2). An extensive and rugged area of deep canyons is in the southwestern part of the survey area, between the Snake and Salmon Rivers. The area north of the Clearwater River is part of the Palouse region of the Inland Northwest.

The lowest elevation in the survey area, 720 feet, is at the confluence of the Snake and Clearwater Rivers. The highest elevation, 5,360 feet, is on the western rim of Craig Mountain. Most of the survey area consists of rolling plateaus that range in elevation from 2,000 to 4,000 feet.

The native vegetation is bunchgrass prairie at the lower elevations and coniferous forests in the cooler, more moist areas at the higher elevations.

Three major rivers are in the area: the Snake River, which forms the western boundary of the area; the Clearwater River, which flows through the northern part; and the Salmon River, which forms part of the southern boundary.

This soil survey updates the soil surveys of Lewiston Area, Idaho, published in 1902 *(15)* and Nez Perce and Lewis Counties, Idaho, published in 1917 *(16)*, and the reconnaissance soil survey of Nez Perce County, Idaho, published in 1976 *(20)*. It provides additional information and has larger maps, which show the soils in greater detail.

General Nature of the Survey Area

This section gives general information about the survey area. It describes history and development, agriculture, and climate.

History and Development

The history and development of the survey area have been strongly influenced by the major rivers

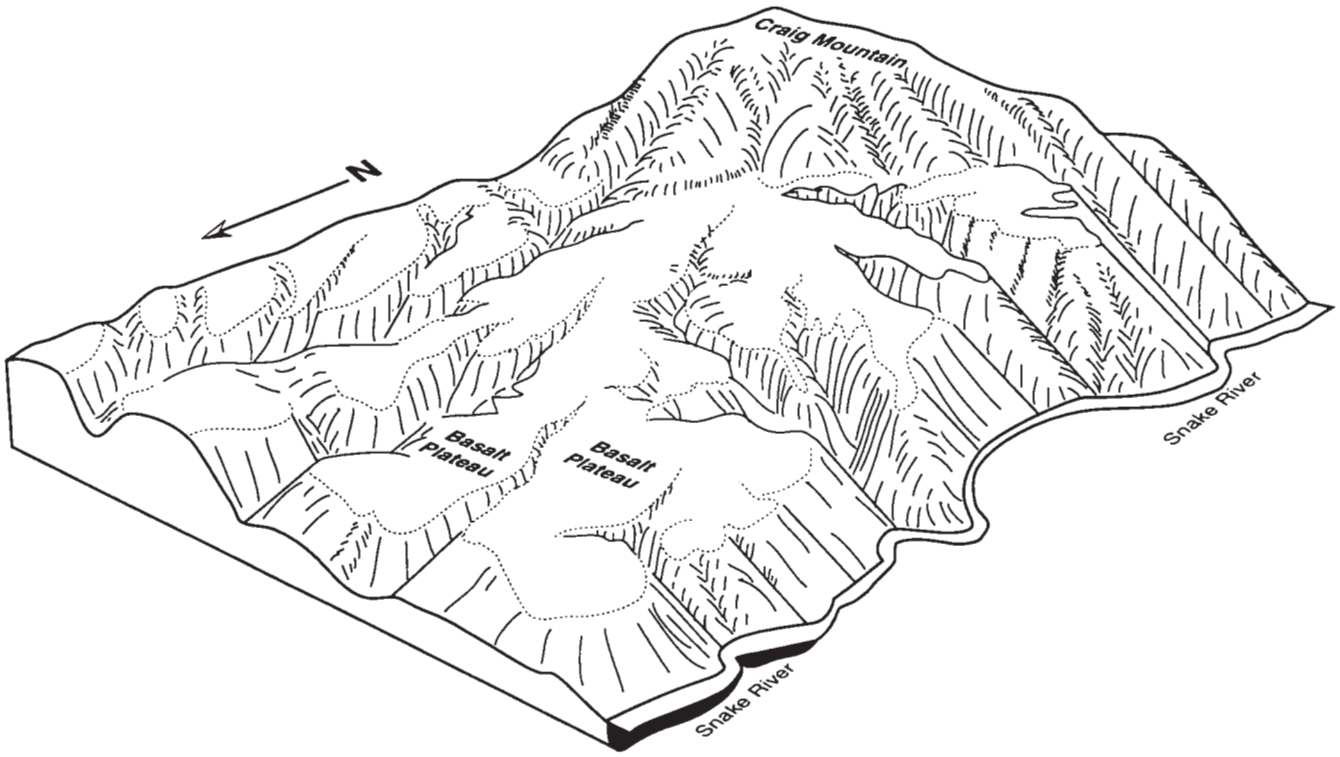


Figure 1.—A plateau-canyon landscape typical of much of the survey area.

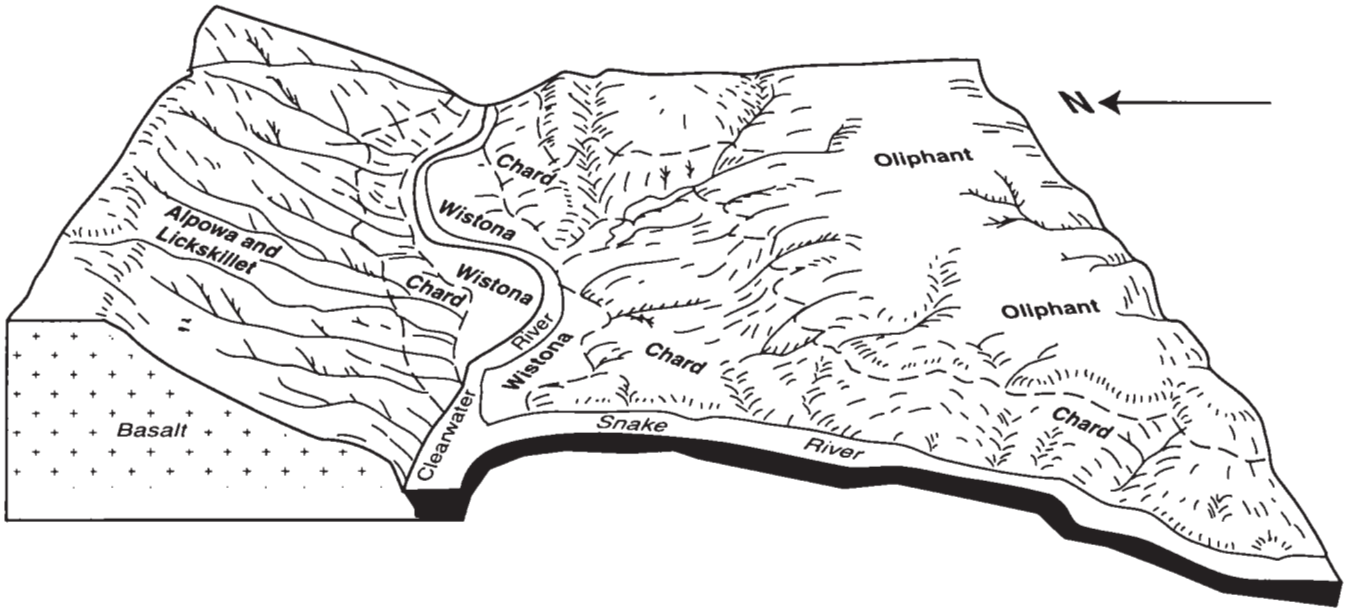


Figure 2.—Generalized distribution of the dominant soils in the immediate Lewiston area.

flowing through the area. The Snake and Clearwater Rivers provided routes of transportation through the region, and the valleys of these rivers provided suitable areas for settlement.

For centuries, the survey area has been the homeland of the Nez Perce Indians and their ancestors. They lived in the valleys, and they hunted, fished, and gathered roots and berries for food. Their

major sources of food were the salmon and steelhead trout in the rivers and the camas bulbs that grew on the prairies.

The Lewis and Clark expedition traveled down the Clearwater River in 1805 on their way west. Their reports encouraged others to move to the region.

In 1812 Donald MacKenzie established a fur trading post on the north bank of the Clearwater River, near present-day Lewiston. This enterprise was part of John Jacob Astor's Pacific Fur Company. The effort failed shortly after it was established.

In 1836 William Craig, a mountainman and trapper, became the first non-Indian settler in Idaho. He made a claim on land in the Lapwai Creek Valley and later acted as an interpreter for the Nez Perce Indians.

Also in 1836, Henry and Eliza Spalding established a Christian mission at the mouth of Lapwai Creek. They introduced the Nez Perce people to farming in the areas of alluvial soils along the creek.

In 1860 gold was discovered in the upper reaches of the Clearwater River Basin, east of the survey area. The Snake and Clearwater Rivers provided transportation routes for the influx of prospectors and miners. Lewiston was founded in 1861 at the confluence of the Snake and Clearwater Rivers as a supply post for the mining district. The deep, fertile soils and the long growing season near Lewiston allowed for the cultivation of a variety of orchard and vegetable crops.

The U.S. Army established a fort in the Lapwai Valley, south of the Spalding Mission, in 1862.

In 1855 a treaty between the U.S. Government and the Nez Perce Indians established a reservation that encompassed much of northern Idaho. In 1863 another treaty reduced the size of the reservation to that of its present boundaries. Conflicts over land between the white settlers and the Indians led to the Chief Joseph War in 1877.

The accessibility of Lewiston by steamboats from Portland, Oregon, quickly established the area as a trade center for the region. Railroads from the west were extended to Genesee in 1887, and they reached Lewiston in 1892.

Widespread agriculture began in the 1870's outside the Nez Perce Reservation, near Genesee and south of Lewiston. The early farmers found that the soils were very productive, and rapid settlement followed. As transportation improved and markets expanded and became more accessible, the demand for additional farmland increased.

In 1895 the land within the Nez Perce Reservation was opened to settlement by non-Indians. Most of the land on the rolling plateaus was claimed and then cultivated. Some of the land had to be cleared of timber. Sawmills were established to produce lumber for the new settlements and farms.

Nez Perce County was one of the first counties established in the Idaho Territory, and originally it included most of northern Idaho. Lewis County was formed from Nez Perce County in 1911, reducing Nez Perce County to its present boundaries. Communities in Lewis County include Nezperce, which is the county seat; Craigmont; Kamiah; Reubens; and Winchester. Cities and communities in Nez Perce County include Culdesac; Gifford; Lapwai; Lewiston, which is the county seat; Peck; and Spalding.

The main industries in the survey area are in Lewiston. A large mill that produces saw timber and paper is on the Clearwater River, and it is the largest employer in the survey area. Other notable employers include an ammunition manufacturing plant, a hospital, a food processing plant, and a jet boat manufacturing plant. Lewis-Clark State College is also located in Lewiston. Tourism and recreation associated with the rivers are becoming important to the local economy.

Construction of Lower Granite Dam on the Snake River in 1975 enabled oceangoing barges to reach Lewiston. This further improved the accessibility of the area to markets for lumber and agricultural products.

Two major highways serve the area. U.S. Highway 12 crosses from east to west, and it connects the survey area with Montana to the east and the Pacific Coast to the west. U.S. Highway 95 crosses from north to south, and it provides an important link with southern Idaho and with points north to the Canadian border.

Agriculture

Agriculture is the backbone of the economy of the survey area. The area produces one of the highest amounts of nonirrigated wheat of any area in Idaho.

Farming in the area began when Lewiston was established in the early 1860's. The mild climate allowed for a variety of produce crops to be grown to supply the gold-mining districts.

Early settlers arrived in the 1860's and 1870's in the areas outside the Nez Perce Indian Reservation. At first, they typically raised livestock and cultivated only enough land to produce vegetables and grain for the needs of their own family. When outside markets for wheat improved and became more accessible, the steeper hillsides were cultivated and wheat became a cash crop. More land was cultivated when horses were replaced by mechanized equipment and land was no longer needed for hay and pasture.

When the Nez Perce Reservation was opened to settlement in 1895, the acreage of cultivated land in the area greatly increased. Almost every quarter section of land had one claimant. The Camas Prairie was settled quickly, and it became a prosperous wheat-growing area.

By the early 1900s, the land around Lewiston had become an important fruit-growing area. An irrigation system was built on the low plateau just south of Lewiston, now known as the Lewiston Orchards. The main fruits grown were apples, pears, cherries, and apricots. Of minor importance were prunes, plums, peaches, and various berries. Some nuts and vegetables were also grown. As the city grew, the orchards were replaced by suburban homes, small pastures, and gardens. At present only a few commercial orchards remain.

Livestock operations are an important industry in the survey area. Sheep were dominant in the early days, but now beef cattle, primarily cow-calf operations, are dominant.

At present the major crops grown are soft white wheat, barley, dry peas, and lentils. Minor crops are green peas, alfalfa hay, rapeseed, canola, bluegrass seed, and oats. Most of the grain is shipped by barge to Portland, where much is then exported. Green peas are processed at a frozen food plant in Lewiston.

Because local landowners recognized the problem of soil erosion and the need for an organized effort to conserve soil, the Lewis Soil Conservation District and the Nez Perce Soil and Water Conservation District were established on June 17, 1941.

Climate

The climate of the survey area is strongly influenced by the wide range in elevation in the area and by the surrounding topography. Considerable variations in temperature and precipitation occur within relatively short distances.

In the low plateaus and valleys near Lewiston, the climate is relatively dry and mild. This mildness, particularly in winter, is a result of warm Pacific airmasses and the sheltering effect of the higher plateaus that almost completely surround the valley. Airmasses moving through the region tend to become warmer and drier as they descend from the higher elevations to the low plateaus and valleys.

As invading airmasses ascend to the higher elevations east of the valleys, they become cooler and are more likely to produce precipitation. The high plateaus are significantly cooler and more moist than the low plateaus and valleys.

Most of the precipitation reaching the survey area results from strong invasions of moist air from the northern Pacific Ocean. These invasions occur most commonly in winter and spring. In summer, invasions of moist air from the west are often blocked by dry, persistent high-pressure systems that reside over the intermountain region of the western United States. The average precipitation hits a small peak in winter, reaches a maximum in May and early in June, and then hits a distinct low point in July and August.

Periodically in summer, conditions are favorable for the formation of convective rainshowers and thundershowers. These showers are often scattered and of short duration, but they can nevertheless produce large amounts of precipitation in a short period of time. Thundershowers over the higher terrain tend to be more frequent and produce more rain.

Winters are cold, but they generally are not too severe. Infrequent cold waves occur when arctic air originating in the Yukon Territory moves southward. The Bitterroot Chain of the Rocky Mountains, which forms the Continental Divide about 75 miles to the east, shields the region from more frequent waves of frigid arctic air. Snowfall is light and often ephemeral at the low elevations, but snow accumulates to depths of several feet and remains on the ground into May at the high elevations.

Table 1 gives data on temperature and precipitation as recorded at Lewiston in the period 1949-92, at Nezperce in the period 1951-92, and at Winchester in the period 1966-92. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season. The climate of the low plateaus and adjacent valleys in the western part of the survey area is characterized by the data recorded at Lewiston. The climate of Camas Prairie and much of the farmland at middle elevations is characterized by the data recorded at Nezperce. The climate of the farmland at high elevations and most of the forest land is characterized by the data recorded at Winchester.

In January, the average temperature is about 32 degrees F at Lewiston, 28 degrees at Nezperce, and 26 degrees at Winchester. The lowest temperature on record, which occurred at Winchester on December 30, 1968, is -40 degrees. In July, the average temperature is about 74 degrees at Lewiston, 65 degrees at Nezperce, and 61 degrees at Winchester. The highest recorded temperature, which occurred at Lewiston on August 4, 1961, is 115 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base

temperature (40 degrees). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 13 inches at Lewiston, 22 inches at Nezperce, and 25 inches at Winchester. Of this, about 50 percent usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than about 3 inches at Lewiston and 6 inches at Nezperce and Winchester. The heaviest 1-day rainfall during the period of record was 2.32 inches at Nezperce on July 13, 1956. Thunderstorms occur on about 16 days each year, and most occur in summer.

The average seasonal snowfall is about 18 inches at Lewiston, 50 inches at Nezperce, and 115 inches at Winchester. The greatest snow depth at any one time during the period of record was 16 inches at Lewiston, 22 inches at Nezperce, and 44 inches at Winchester. On the average, 10 days of the year at Lewiston, 38 days at Nezperce, and 97 days at Winchester have at least 1 inch of snow on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 75 percent. The sun shines 80 percent of the time possible in summer and 45 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept or model of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

A special mapping procedure was used in the rugged canyons of the Snake and Salmon Rivers, which comprise an area of about 100,000 acres. Because of the steep slopes and limited access, soil scientists used photo interpretations to select typical sites that they then visited by helicopter. Complete descriptions of the soils and range vegetation were collected at each of these sites, and range production was measured at selected sites.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil

scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

General Soil Map Units

The general soil map in this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The components of one map unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The general soil map units in this survey have been grouped into general kinds of landscape for broad interpretive purposes. Each of the broad groups and the map units in each group are described in the following pages.

Soils on Dissected Alluvial Terraces

Number of map units: 1
Percentage of survey area: 2 percent

1. Chard

Nearly level to very steep, very deep, well drained soils that formed in alluvium

Percentage of survey area: 2 percent
Landscape position: Dissected alluvial terraces
Slope range: 1 to 65 percent
Elevation: 740 to 1,360 feet
Frost-free season (32 degrees F): 170 to 190 days
Average annual precipitation: 12 to 15 inches
Minor components: Urban land, Wistona and Tammany soils
Present uses: Cropland, building site development, rangeland
Limitations to use: Droughtiness, limited average annual precipitation, hazard of erosion, sandy substratum, slope in some areas

Soils on Plateaus

Number of map units: 8
Percentage of survey area: 64 percent

2. Broadax-Oliphant

Very deep, well drained soils that have accumulations of carbonates and formed in loess

Percentage of survey area: 7 percent
Landscape position: Broadax soils—sides of hills on plateaus, generally at higher elevations; Oliphant soils—commonly north- and east-facing side slopes of hills on plateaus, generally at lower elevations
Slope range: 1 to 40 percent
Elevation: 1,200 to 2,900 feet
Frost-free season (32 degrees F): 140 to 180 days
Average annual precipitation: 13 to 20 inches
Minor components: Endicott, Slickpoo, Hatwai, Bryden, Redmore, Calouse, Nez Perce, Stember, Athena, Alpowa, and Lickskillet soils
Present uses: Cropland, building site development, rangeland
Limitations to use: Hazard of erosion, limited average annual precipitation in some areas, strong alkalinity in some areas

3. Naff-Palouse-Thatuna

Very deep, well drained and moderately well drained, warm soils that formed in loess

Percentage of survey area: 10 percent
Landscape position: Naff soils—convex side slopes of hills on plateaus; Palouse soils—concave side slopes of hills on plateaus; Thatuna soils—

plane to concave side slopes of hills on plateaus
Slope range: 2 to 40 percent
Elevation: 1,800 to 2,900 feet
Frost-free season (32 degrees F): 110 to 160 days
Average annual precipitation: 18 to 22 inches
Minor components: Waha, Athena, Tilma, Calouse, Garfield, Latahco, and Linville soils
Present use: Cropland
Limitations to use: Hazard of erosion, seasonal perched water table in some areas

4. Uhlorn-Nez Perce

Very deep, well drained and moderately well drained soils that have a high content of organic matter in the surface layer and formed in loess

Percentage of survey area: 14 percent
Landscape position: Uhlorn soils—side slopes of hills on plateaus, commonly on north- and east-facing slopes; Nez Perce soils—summits, shoulders, and footslopes of hills on plateaus, commonly in plane to convex areas (fig. 3)
Slope range: 1 to 20 percent
Elevation: 2,600 to 4,100 feet
Frost-free season (32 degrees F): 100 to 140 days
Average annual precipitation: 20 to 24 inches
Minor components: Vollmer, Mohler, Gwin, Watama, Flybow, Westlake, and Latahco soils
Present use: Cropland
Limitations to use: Hazard of erosion, seasonal perched water table in some areas

5. Southwick-Driscoll-Larkin

Very deep, moderately well drained and well drained soils that formed in loess

Percentage of survey area: 11 percent
Landscape position: Southwick soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Driscoll soils—plane to convex side slopes and summits of hills on plateaus, commonly on south- and west-facing slopes; Larkin soils—plane to concave side slopes of hills on plateaus
Slope range: 2 to 25 percent
Elevation: 2,300 to 3,400 feet
Frost-free season (32 degrees F): 100 to 130 days
Average annual precipitation: 22 to 25 inches
Minor components: Jacket, Lauby, Bluesprin, and Wilkins soils
Present uses: Cropland, woodland, grazeable woodland
Limitations to use: Hazard of erosion, seasonal perched water table in some areas

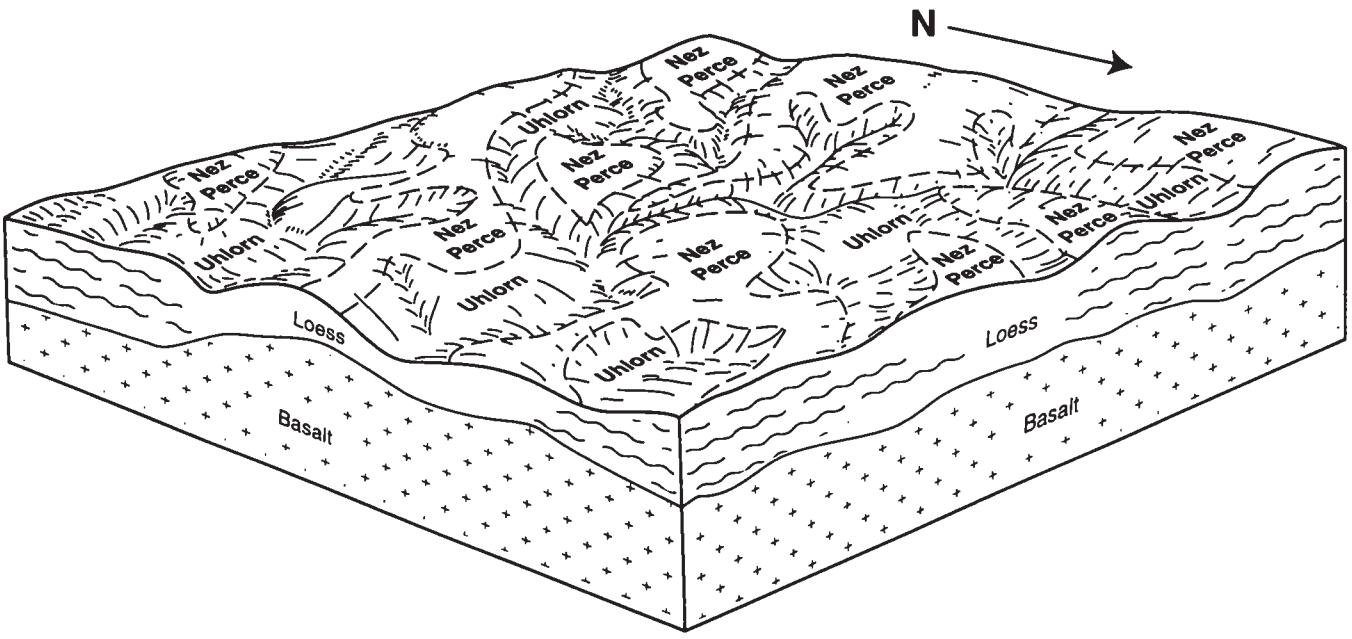


Figure 3.—Typical pattern of the soils in general soil map unit 4.

6. Taney-Setters

Moderately deep to a fragipan and very deep, moderately well drained soils that formed in loess

Percentage of survey area: 10 percent
Landscape position: Taney soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Setters soils—plane to convex side slopes and summits of hills on plateaus, commonly on south- and west-facing slopes
Slope range: 2 to 30 percent
Elevation: 2,300 to 4,200 feet
Frost-free season (32 degrees F): 100 to 120 days
Average annual precipitation: 23 to 26 inches
Minor components: Joel, Carlinton, Johnson, Kruse, Wilkins, Cavendish, Larabee, and Labuck soils
Present uses: Cropland, hayland, woodland, grazeable woodland, pastureland
Limitations to use: Hazard of erosion, seasonal perched water table in some areas, short growing season, restricted rooting depth

7. Joel-Boles

Very deep, well drained and moderately well drained, cool soils that formed in loess

Percentage of survey area: 3 percent
Landscape position: Joel soils—plane to concave side slopes of hills on plateaus, commonly on north- and east-facing slopes; Boles soils—summits and shoulders of hills on plateaus
Slope range: 1 to 20 percent
Elevation: 4,000 to 4,600 feet
Frost-free season (32 degrees F): 80 to 100 days
Average annual precipitation: 22 to 26 inches
Minor components: Wilkins, Sweiting, and Zaza soils
Present uses: Cropland, woodland, grazeable woodland, hayland, pastureland
Limitations to use: Hazard of erosion, short growing season, seasonal perched water table in some areas, restricted rooting depth in some areas

8. Cramont-Talmaks

Very deep, well drained soils that formed in loess, volcanic ash, and material weathered from basalt

Percentage of survey area: 6 percent
Landscape position: Cramont soils—side slopes and broad ridges of hills on high plateaus, commonly in plane to convex areas; Talmaks soils—side slopes and summits of hills on high plateaus, commonly on north- and east-facing slopes
Slope range: 2 to 20 percent
Elevation: 4,100 to 5,000 feet
Frost-free season (32 degrees F): 60 to 80 days
Average annual precipitation: 24 to 28 inches
Minor components: Culdesac, Seddow, Zaza, and Maloney soils, Aquolls, Sweiting and Carlinton soils
Present uses: Woodland, grazeable woodland, pastureland
Limitations to use: Hazard of erosion, short growing season

9. Shilla-Seddow-Larabee

Deep and moderately deep, well drained soils that formed in volcanic ash and material weathered from basalt

Percentage of survey area: 3 percent
Landscape position: Shilla soils—side slopes and summits of hills on high plateaus; Seddow soils—side slopes of hills on high plateaus, commonly on south- and west-facing slopes; Larabee soils—south- and west-facing side slopes of hills on high plateaus
Slope range: 2 to 40 percent
Elevation: 4,200 to 5,300 feet
Frost-free season (32 degrees F): 60 to 80 days
Average annual precipitation: 26 to 28 inches
Minor components: Zaza soils; Aquolls; Webbridge, Agatha, Cramont, and Culdesac soils
Present uses: Woodland, grazeable woodland
Limitations to use: Depth to bedrock, hazard of erosion, short growing season

Soils on Canyonsides

Number of map units: 4
Percentage of survey area: 34 percent

10. Lickskillet-Limekiln-Crowers

Shallow and very deep, well drained, medium textured soils that have an accumulation of carbonates and formed in loess and in colluvium derived from basalt

Percentage of survey area: 6 percent
Landscape position: Lickskillet and Limekiln soils—

south- and west-facing canyonsides; Crowers soils—north- and east-facing canyonsides (fig. 4)
Slope range: 35 to 80 percent
Elevation: 740 to 2,800 feet
Frost-free season (32 degrees F): 160 to 190 days
Average annual precipitation: 12 to 16 inches
Minor components: Rock outcrop, Entic Haploxerolls, Haploxerolls, Chard soils
Present uses: Rangeland, wildlife habitat
Limitations to use: Steepness of slope, depth to bedrock in some areas, hazard of erosion, Rock outcrop in some areas

11. Kettenbach-Linville

Moderately deep and very deep, well drained, moderately fine textured and medium textured, warm soils that formed in loess and in colluvium derived from basalt

Percentage of survey area: 17 percent
Landscape position: Kettenbach soils—south- and west-facing canyonsides; Linville soils—north- and east-facing canyonsides (fig. 5)
Slope range: 25 to 90 percent
Elevation: 800 to 4,000 feet
Frost-free season (32 degrees F): 120 to 160 days
Average annual precipitation: 15 to 22 inches
Minor components: Keuterville and Gwin soils; Rock outcrop; Meland, Klickson, Waha, Immig, Bridgewater, Lapwai, Flybow, Jacket, Almota, Bakeoven, Watama, Athena, and Hatwai soils
Present uses: Rangeland, wildlife habitat
Limitations to use: Steepness of slope, hazard of erosion, depth to bedrock in some areas

Figure 4.—Typical area of general soil map unit 10, along lower Captain John Creek.

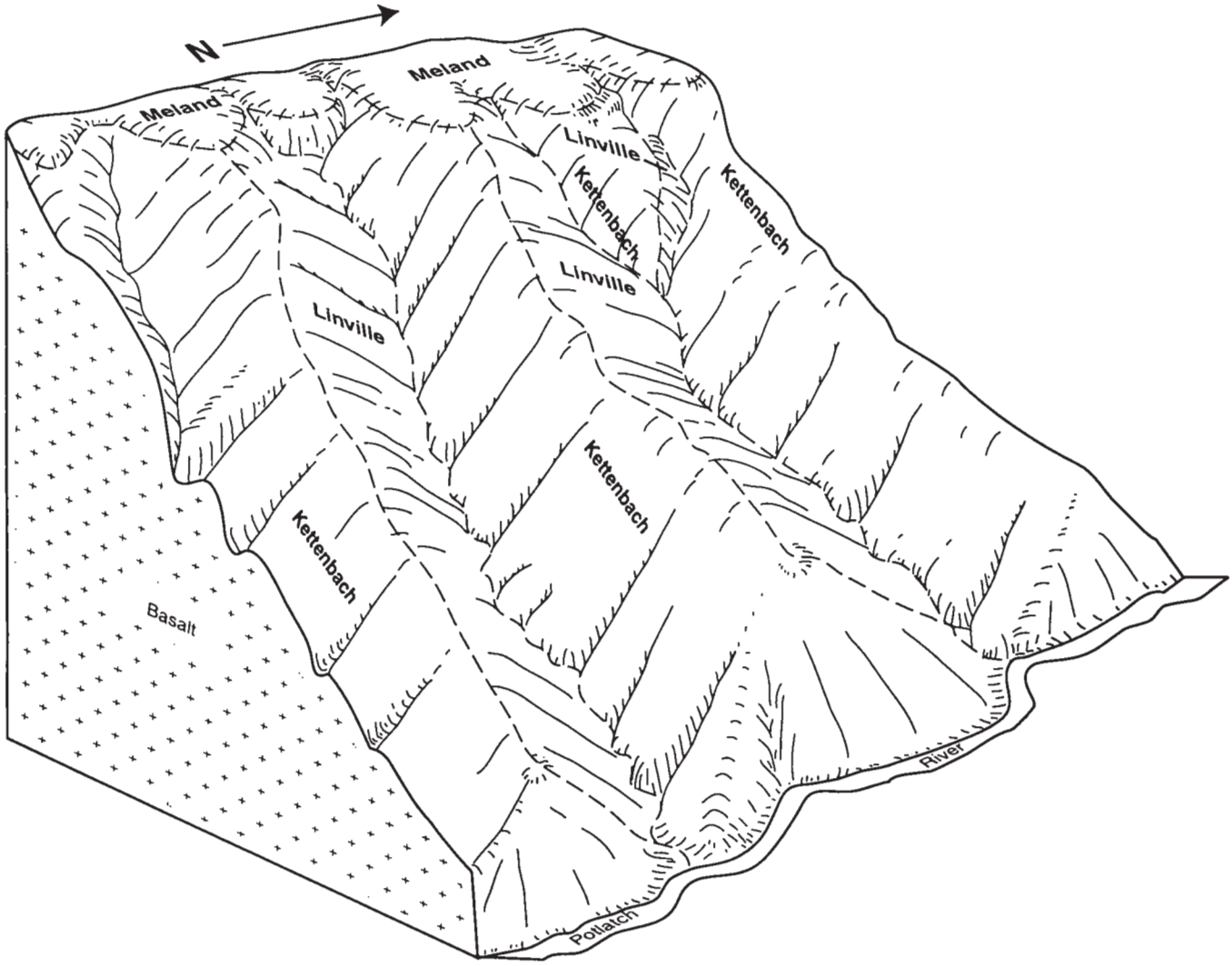


Figure 5.—Typical pattern of the soils in general soil map unit 11.

12. Klickson-Hooverton

Very deep and moderately deep, well drained, medium textured to moderately fine textured, cool and warm soils that formed in loess and in colluvium derived from basalt

Percentage of survey area: 9 percent
Landscape position: Klickson soils—north- and east-facing canyonsides; Hooverton soils—south- and west-facing canyonsides (fig. 6)
Slope range: 35 to 90 percent
Elevation: 1,500 to 5,300 feet
Frost-free season (32 degrees F): 70 to 120 days
Average annual precipitation: 22 to 28 inches
Minor components: Mallory, Larabee, Gwin, Jacket, Webbridge, and Agatha soils
Present uses: Woodland, grazeable woodland, rangeland, wildlife habitat
Limitations to use: Steepness of slope, depth to bedrock in some areas, hazard of erosion, short growing season

13. Johnson-Dragnot

Very deep and moderately deep, well drained, moderately fine textured to moderately coarse textured soils that formed in granitic colluvium

Percentage of survey area: 2 percent

Landscape position: Johnson soils—north- and east-facing canyonsides; Dragnot soils—south- and west-facing canyonsides
Slope range: 40 to 70 percent
Elevation: 1,000 to 3,000 feet
Frost-free season (32 degrees F): 80 to 150 days
Average annual precipitation: 22 to 26 inches
Minor components: Uvi, Ahsahka, and Klickson soils
Present uses: Woodland, grazeable woodland, hayland, pastureland
Limitations to use: Steepness of slope, hazard of erosion, depth to bedrock in some areas

Figure 6.—Typical area of general soil map unit 12 overlooking the canyon of Maloney Creek, at the southern rim of Craig Mountain. Klickson soils are in areas of Douglas fir timber, and Hooverton soils are in areas of rangeland.

Detailed Soil Map Units

The map units delineated on the detailed soil maps in this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses.

A map unit delineation on a map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They are not mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Oliphant silt loam, 1 to 4 percent slopes, is a phase of the Oliphant series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Uhlorn-Nez Perce complex, 2 to 10 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map

units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Klickson-Hooverton association, 35 to 90 percent slopes, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

This survey was mapped at two levels of detail. At the most detailed level, map unit boundaries were plotted and verified at closely spaced intervals. The valleys and rolling plateaus, used primarily as cropland, were mapped at the most detailed level. At the less detailed level, map unit boundaries were plotted and verified at wider intervals. The canyons were mapped at this level of detail. The detail of mapping was selected to meet the anticipated long-term use of the survey, and the map units were designed to meet the needs for that use.

In the map unit descriptions that follow, a semitabular format is used. In this format a centered heading (for example, ***Setting***) is used to identify the kind of information grouped directly below it. Introducing each item of information under the heading is an italicized term or phrase (for example, *Landform:*) that identifies or describes the information. Many of the centered headings and introductory terms or phrases are self-explanatory; however, some of them need further explanation. These explanations are provided in the following paragraphs, generally in the order in which they are used in the map unit descriptions.

Composition is given for the components identified in the name of the map unit as well as for the contrasting inclusions.

Inclusions are areas of components (soils or miscellaneous areas) that differ from the components for which the unit is named. Inclusions can be either similar or contrasting.

Similar inclusions are components that differ from the components for which the unit is named but that for purposes of use and management can be considered to be the same as the named components. Note that in the "Composition" paragraph a single percentage is provided for a named soil and the similar inclusions because their use and management are similar.

Contrasting inclusions are components that differ sufficiently from the components for which the unit is named that they would have different use and management if they were extensive enough to be managed separately. For most uses, contrasting inclusions have limited effect on use and management. Inclusions generally are in small areas, and they could not be mapped separately because of the scale used. Some small areas of strongly contrasting inclusions are identified by a special symbol on the detailed soil maps. A few inclusions may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the inclusions on the landscape.

Landform refers to the dominant three-dimensional part or parts of the land surface on which the component is located. In naming landforms, an effort has been made to name the specific landform on which the component occurs. In some instances, however, the component may occur on more than one landform.

Position on landform refers to the dominant position or positions on the landform or landforms on which the component is located. In naming landform positions, an effort has been made to give the specific position of the component rather than a general position that could encompass other components.

Typical profile is a vertical, two-dimensional section of the soil extending from the surface to a restrictive layer or to a depth of 60 inches or more.

Depth class is an adjective term (for example, moderately deep) for the depth of the soil.

Permeability is the quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil.

Available water capacity is the capacity of the soil to hold water available for use by most plants. It commonly is expressed as inches of water per inch of soil (see "Glossary").

Hazard of water erosion refers to the hazard if protective plant cover is removed. The hazard of erosion is constant and cannot be increased or reduced.

Major uses are the dominant uses at the time the major part of the fieldwork for this survey was completed.

General management considerations provide additional perspective on the suitability and limitations of the unit for the major uses. They may apply to the entire unit or to a given component of the unit.

1—Agatha loam, 15 to 40 percent slopes

Composition

Agatha soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills and canyons
Position on landform: Backslopes and footslopes near draws
Slope range: 15 to 40 percent
Elevation: 3,000 to 4,400 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Agatha Soil

Typical profile:
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Larabee soils on convex slopes of 35 to 50 percent (10 percent)
- Shilla soils on north- and east-facing slopes of 35 to 50 percent (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/mallow ninebark
Estimated average annual production of timber (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
General management considerations:
- When openings are made in the canopy, the invasion of brushy plants can hinder natural tree regeneration.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/mallow ninebark
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Capability Classification

6e, nonirrigated

2—Agatha loam, 40 to 75 percent slopes

Composition

Agatha soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Position on landform: Backslopes and footslopes near draws
Slope range: 40 to 75 percent
Elevation: 1,200 to 5,000 feet
Average annual precipitation: About 27 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Agatha Soil

Typical profile:
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Rock outcrop on sharply convex slopes and near ridges (5 percent)
- Webbridge soils on north- and east-facing slopes of 35 to 80 percent (5 percent)
- Larabee soils on convex slopes of 35 to 80 percent (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/mallow ninebark
Estimated average annual production of timber (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Grand fir/mallow ninebark
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

3—Agatha-Rock outcrop complex, 35 to 75 percent slopes

Composition

Agatha soil and similar inclusions: 55 percent
Rock outcrop: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 1,200 to 4,300 feet
Average annual precipitation: About 27 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Agatha Soil

Position on landform: Smooth and concave, north-facing slopes
Slope range: 35 to 75 percent
Typical profile:
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Slope range: 35 to 75 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

• Gwin soils on convex slopes of 35 to 80 percent (10 percent)
• Webbridge soils on north- and east-facing slopes of 35 to 50 percent (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Agatha soil—grand fir/mallow ninebark; Rock outcrop—little or no vegetation
Estimated average annual production of timber on the Agatha soil (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Rock outcrop may cause breakage of timber and hinder yarding.

Grazeable Woodland

Natural potential plant community: Agatha soil—grand fir/mallow ninebark; Rock outcrop—little or no vegetation
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

4—Ahsahka loam, 15 to 40 percent slopes

Composition

Ahsahka soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Slope range: 15 to 40 percent
Elevation: 1,300 to 1,850 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Ahsahka Soil

Typical profile:
0 to 11 inches—dark brown loam
11 to 17 inches—brown loam
17 to 32 inches—yellowish brown loam
32 to 52 inches—brown clay
52 to 60 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Johnson soils on hills (10 percent)
• Driscoll soils on hills (5 percent)

Major Uses

Pastureland, hayland, woodland, grazeable woodland

Pastureland and Hayland

General management considerations:
• The steepness of slope limits the use of equipment for tillage, seeding, and other grazing improvement practices.

Woodland

Natural potential plant community: Ponderosa pine/Idaho fescue
Estimated average annual production of timber (CMAI): Ponderosa pine—122 cubic feet per acre at 40 years of age
General management considerations:
• This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/Idaho fescue
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Capability Classification

6e, nonirrigated

5—Almota-Athena-Hatwai complex, 45 to 65 percent slopes

Composition

Almota soil and similar inclusions: 30 percent
Athena soil and similar inclusions: 30 percent
Hatwai soil and similar inclusions: 25 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 1,800 to 2,200 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 155 days

Characteristics of the Almota Soil

Position on landform: East-facing slopes
Slope range: 45 to 65 percent
Typical profile:
0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam

35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 30 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Athena Soil

Position on landform: Mounds on east-facing slopes
Slope range: 45 to 65 percent
Typical profile:
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Hatwai Soil

Description of areas: Circular slick spots
Position on landform: Small depressions and intermound areas on east-facing slopes
Slope range: 45 to 65 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 16 inches—brown silt loam
16 to 22 inches—brown silty clay loam
22 to 28 inches—yellowish brown silt loam
28 to 60 inches—yellowish brown and pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe
Sodicity: Moderate or strong

Contrasting Inclusions

- Lickskillet soils on convex ridges (10 percent)
- Rock outcrop on convex ridges (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Almota and Athena soils—Idaho fescue/forbs; Hatwai soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- Because of the slow permeability and poor tilth, the Hatwai soil is susceptible to compaction during wet periods.

Capability Classification

7e, nonirrigated

6—Almota-Linville complex, 30 to 50 percent slopes

Composition

Almota soil and similar inclusions: 45 percent
Linville soil and similar inclusions: 35 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,500 to 2,200 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 155 days

Characteristics of the Almota Soil

Position on landform: Convex, east-facing slopes
Slope range: 30 to 50 percent
Typical profile:
0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam
35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 30 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Linville Soil

Position on landform: Smooth and concave, east-facing slopes
Slope range: 30 to 50 percent
Typical profile:
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Ketterbach soils on south- and west-facing slopes (10 percent)
- Lickskillet soils on convex, south- and west-facing ridges (5 percent)
- Crowers soils in areas below an elevation of about 1,800 feet (3 percent)
- Hatwai soils that occur as scattered slick spots on east-facing slopes (2 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Idaho fescue/forbs
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

7—Alpowa-Lickskillet complex, 15 to 35 percent slopes

Composition

Alpowa soil and similar inclusions: 50 percent
Lickskillet soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills and canyons
Elevation: 1,000 to 2,400 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Alpowa Soil

Position on landform: Concave slopes and mounds in areas of patterned ground
Slope range: 15 to 35 percent
Typical profile:
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam
30 to 60 inches—very pale brown, calcareous very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Lickskillet Soil

Position on landform: Convex slopes and intermound areas in areas of patterned ground
Slope range: 15 to 35 percent
Typical profile:
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 12 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Watama soils on mounds in areas of patterned ground (10 percent)
- Rock outcrop on convex slopes (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Lickskillet soil—bluebunch wheatgrass/plains pricklypear

General management considerations:
- The shallow depth and content of rock fragments in the surface layer of the Lickskillet soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Lickskillet soil limits the production of forage.

Capability Classification

6e, nonirrigated

8—Alpowa-Lickskillet complex, 35 to 50 percent slopes

Composition

Alpowa soil and similar inclusions: 50 percent
Lickskillet soil and similar inclusions: 30 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 800 to 2,500 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Alpowa Soil

Position on landform: West-facing slopes
Slope range: 35 to 50 percent
Typical profile:
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam
30 to 60 inches—very pale brown, calcareous very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Lickskillet Soil

Position on landform: South-facing slopes
Slope range: 35 to 50 percent
Typical profile:
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 12 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Almota soils on toeslopes and east-facing slopes (5 percent)
- Watama soils on concave slopes (5 percent)
- Bakeoven soils on ridges (5 percent)
- Chard soils on footslopes and summits (3 percent)
- Rock outcrop on convex slopes (2 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Lickskillet soil—bluebunch wheatgrass/plains pricklypear
General management considerations:
- The steepness of slope, shallow depth of the Lickskillet soil, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Lickskillet soil limits the production of forage.

Capability Classification

7e, nonirrigated

9—Aquolls, nearly level

Composition

Aquolls and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Flood plains and drainageways on plateaus
Slope range: 0 to 3 percent
Elevation: 4,000 to 5,200 feet
Average annual precipitation: About 27 inches
Frost-free season (32 degrees F): About 70 days

Characteristics of the Aquolls

Representative profile:
0 to 3 inches—very dark gray silt loam

3 to 10 inches—dark gray silty clay loam
10 to 18 inches—very pale brown and light gray, mottled silt loam
18 to 38 inches—light brownish gray and light gray, mottled silty clay loam
38 to 42 inches—light gray, mottled extremely gravelly clay loam
42 inches—fractured basalt
Depth class: Deep and very deep
Drainage class: Poorly drained
Permeability: Moderately slow
Available water capacity: Low and moderate
Potential rooting depth: More than 40 inches
Restriction to rooting depth: Seasonal high water table
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 6 inches above the surface (ponded) to a depth of 18 inches below the surface in March through June
Frequency of flooding: Occasional in March through June

Contrasting Inclusions

- Talmaks soils on footslopes of adjacent hills (10 percent)
- Wilkins soils in higher areas of flood plains (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Tufted hairgrass-sedge
General management considerations:
- This unit is susceptible to compaction during wet periods.
- The cold temperatures limit plant growth in spring.
- Deep snowpack in most years limits the grazing season to summer and fall.

Capability Classification

5w, nonirrigated

10—Athena silt loam, 20 to 45 percent slopes

Composition

Athena soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: North- and east-facing slopes
Slope range: 20 to 45 percent
Elevation: 1,500 to 2,000 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Athena Soil

Typical profile:
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Waha soils on shoulders and ridges (5 percent)
- Very deep soils that are fine sandy loam throughout and are on hills (5 percent)
- Crowers soils on convex slopes of 15 to 25 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

6e, nonirrigated

11—Bakeoven-Watama complex, 10 to 35 percent slopes

Composition

Bakeoven soil and similar inclusions: 55 percent
Watama soil and similar inclusions: 35 percent
Contrasting inclusions: 10 percent

Setting

Landform: Canyons
Elevation: 1,000 to 2,400 feet

Average annual precipitation: About 15 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Bakeoven Soil

Position on landform: Intermound areas in areas of patterned ground
Slope range: 10 to 35 percent
Typical profile:
0 to 3 inches—dark grayish brown very stony loam
3 to 6 inches—brown very gravelly clay loam
6 inches—basalt
Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 4 to 10 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Watama Soil

Position on landform: Mounds in areas of patterned ground
Slope range: 10 to 35 percent
Typical profile:
0 to 11 inches—dark grayish brown silt loam
11 to 34 inches—grayish brown and brown silt loam
34 to 38 inches—yellowish brown gravelly silt loam
38 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Rock outcrop on convex slopes (10 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Bakeoven soil—stiff sagebrush/Sandberg bluegrass; Watama soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- The very shallow depth and the content of rock fragments in the surface layer of the Bakeoven soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds and make the soil very poorly suited to range seeding.
- The very low available water capacity of the Bakeoven soil limits the production of forage.

Capability Classification

Bakeoven soil—7s, nonirrigated; Watama soil—4e, nonirrigated

12—Boles-Joel complex, 1 to 8 percent slopes

Composition

Boles soil and similar inclusions: 55 percent
Joel soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Boles Soil

Position on landform: Convex summits and shoulders
Slope range: 1 to 6 percent
Typical profile:
0 to 13 inches—dark grayish brown and grayish brown silt loam
13 to 17 inches—light brownish gray and light gray silt loam
17 to 45 inches—brown silty clay
45 to 70 inches—yellowish brown, calcareous silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 22 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 10 to 18 inches in February through April

Characteristics of the Joel Soil

Position on landform: Plane to concave slopes
Slope range: 3 to 8 percent
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Wilkins soils in and near drainageways (10 percent)
- Taney soils on convex, north- and west-facing side slopes and toeslopes (5 percent)

Major Uses

Cropland, pastureland and hayland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- The abrupt silty clay subsoil of the Boles soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- Wetness of the Boles soil in spring increases the risk of compaction if farm equipment is used.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- Because of wetness of the Boles soil in spring, trampling by livestock can cause compaction of the soil and can damage plants.

Woodland

Natural potential plant community: Boles soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
Estimated average annual production of timber on the Boles soil (CMAI): Ponderosa pine—118 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
- The seasonal perched water table in the Boles soil limits the survival rate of planted seedlings.
- Because of the seasonal perched water table, the Boles soil is susceptible to compaction.
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Boles soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Boles soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
General management considerations:
- The surface layer of the Boles soil is susceptible to compaction in wet seasons because of the seasonal perched water table.

Capability Classification

3e, nonirrigated

13—Bridgewater-Joseph complex, 1 to 3 percent slopes

Composition

Bridgewater soil and similar inclusions: 50 percent
Joseph soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Stream terraces and flood plains
Elevation: 750 to 2,300 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Bridgewater Soil

Position on landform: Low stream terraces
Slope range: 1 to 3 percent
Typical profile:
0 to 16 inches—dark brown extremely gravelly sandy loam
16 to 22 inches—brown extremely gravelly loam
22 to 34 inches—brown extremely cobbly sandy loam
34 to 60 inches—dark grayish brown extremely gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, very rapid in the lower part
Available water capacity: Very low
Potential rooting depth: More than 60 inches
Runoff: Very slow
Hazard of water erosion: Slight
Frequency of flooding: Rare

Characteristics of the Joseph Soil

Position on landform: Flood plains

Slope range: 1 to 2 percent
Typical profile:
0 to 10 inches—grayish brown extremely cobbly loamy coarse sand
10 to 26 inches—grayish brown extremely cobbly loamy coarse sand
26 to 36 inches—grayish brown extremely cobbly sand
36 to 60 inches—grayish brown extremely gravelly coarse sand
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Very rapid
Available water capacity: Very low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 36 to 60 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 36 to 60 inches in December through June
Frequency of flooding: Frequent in December through June

Contrasting Inclusions

- Lapwai soils on terraces (10 percent)
- Tombeall soils in sloughs and stream channels (5 percent)

Major Uses

Pastureland, hayland, rangeland

Pastureland and Hayland

General management considerations:
- Periodic flooding and the seasonal high water table in the Joseph soil limit the choice of plants suitable for maximum production of forage.
- Because of wetness of the Joseph soil in spring, trampling by livestock can result in compaction and can damage plants.
- The high content of coarse fragments in the surface layer of the soils limits some tillage and seeding operations.
- The very low available water capacity limits the production of forage and the choice of suitable plants. Irrigation may be needed for maximum production of forage.

Rangeland

Natural potential plant community: Bridgewater soil—common snowberry/bluebunch wheatgrass; Joseph soil—alder/wildrye
General management considerations:
- Because of the seasonal high water table in the Joseph soil, this unit is susceptible to compaction.
- Flooding in spring may prevent access by livestock.

Capability Classification

Bridgewater soil—6s, nonirrigated; Joseph soil—6w, nonirrigated

14—Broadax silt loam, 2 to 8 percent slopes

Composition

Broadax soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus and benches
Slope range: 2 to 8 percent
Elevation: 1,900 to 2,500 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 155 days

Characteristics of the Broadax Soil

Typical profile:
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Slight

Contrasting Inclusions

- Hatwai soils that occur as circular slick spots and commonly are on convex, west-facing slopes (10 percent)
- Slickpoo soils on south- and west-facing slopes of 5 to 15 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The hazard of erosion is a concern.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

2e, nonirrigated

15—Broadax silt loam, 8 to 20 percent slopes

Composition

Broadax soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Dominantly north- and east-facing slopes
Slope range: 8 to 20 percent
Elevation: 1,900 to 2,500 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 155 days

Characteristics of the Broadax Soil

Typical profile:
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe
Sodicity: Slight

Contrasting Inclusions

- Slickpoo soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Hatwai soils that occur as circular slick spots on south- and west-facing, convex slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

3e, nonirrigated

16—Broadax-Hatwai complex, 1 to 8 percent slopes

Composition

Broadax soil and similar inclusions: 45 percent
Hatwai soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,500 to 2,200 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Broadax Soil

Slope range: 1 to 8 percent
Typical profile:
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Slight

Characteristics of the Hatwai Soil

Description of areas: Small, circular slick spots
Position on landform: Commonly on convex shoulders and summits
Slope range: 1 to 8 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches

Restriction to rooting depth: Dense subsoil at a depth of 15 to 21 inches
Runoff: Rapid
Hazard of water erosion: Severe
Sodicity: Moderate or strong

Contrasting Inclusions

- Bryden soils on south- and west-facing shoulders and ridges (5 percent)
- Soils that have a light-colored, eroded surface layer and a clayey subsoil and are on convex, south- and west-facing nose slopes (5 percent)
- Slickpoo soils on south- and west-facing slopes of 5 to 15 percent (5 percent)

Major Uses

Cropland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The hazard of erosion is a concern.
- The sodicity of the Hatwai soil creates special soil management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure in the surface layer.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

Capability Classification

Broadax soil—2e, nonirrigated; Hatwai soil—4e, nonirrigated

17—Broadax-Hatwai complex, 8 to 15 percent slopes

Composition

Broadax soil and similar inclusions: 50 percent
Hatwai soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,500 to 1,800 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Broadax Soil

Position on landform: Dominantly south- and west-facing slopes
Slope range: 8 to 15 percent
Typical profile:
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam
33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Severe
Sodicity: Slight

Characteristics of the Hatwai Soil

Description of areas: Small, circular slick spots
Position on landform: Commonly on convex, south- and west-facing shoulders
Slope range: 8 to 15 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense subsoil at a depth of 15 to 21 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate or strong

Contrasting Inclusions

- Slickpoo soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Light-colored, eroded soils that have a clayey subsoil and are on convex nose slopes (3 percent)

• Bryden soils on south- and west-facing slopes of 4 to 12 percent on shoulders (2 percent)

Major Uses

Cropland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the Hatwai soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure in the surface layer.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The steepness of slope limits the use of construction equipment.

Capability Classification

Broadax soil—3e, nonirrigated; Hatwai soil—4e, nonirrigated

18—Caldwell-Latah complex, 0 to 3 percent slopes

Composition

Caldwell soil and similar inclusions: 50 percent
Latah soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Flood plains
Elevation: 2,570 to 2,780 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Caldwell Soil

Slope range: 0 to 3 percent
Typical profile:
0 to 9 inches—grayish brown silt loam
9 to 26 inches—dark gray silt loam
26 to 39 inches—gray silty clay loam
39 to 60 inches—light brownish gray, mottled silty clay loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 36 to 60 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 36 to 60 inches in November through June
Frequency of flooding: Occasional in January through May

Characteristics of the Latah Soil

Position on landform: Commonly near toeslopes of adjacent hills
Slope range: 0 to 3 percent
Typical profile:
0 to 19 inches—dark grayish brown silt loam
19 to 30 inches—light brownish gray and light gray silt loam
30 to 60 inches—brown, mottled silty clay loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 6 to 18 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 6 to 18 inches in December through April
Frequency of flooding: Occasional in December through April

Contrasting Inclusions

• Poorly drained, stratified sandy and loamy soils that are near stream channels (10 percent)

Major Uses

Pastureland, hayland

Pastureland and Hayland

General management considerations:
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.

• Because of wetness in spring, trampling by livestock can compact the soil and damage plants.

Capability Classification

Caldwell soil—3w, nonirrigated; Latah soil—4w, nonirrigated

19—Calouse-Almota complex, 2 to 15 percent slopes

Composition

Calouse soil and similar inclusions: 55 percent
Almota soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,900 to 2,700 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 135 days

Characteristics of the Calouse Soil

Slope range: 2 to 15 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 32 inches—brown and yellowish brown silt loam
32 to 68 inches—light yellowish brown, white, and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Severe
Sodicity: Slight

Characteristics of the Almota Soil

Position on landform: South- and west-facing, convex slopes
Slope range: 5 to 15 percent
Typical profile:
0 to 17 inches—dark grayish brown and dark brown silt loam
17 to 24 inches—brown silt loam
24 to 35 inches—pale brown, calcareous gravelly silt loam
35 to 39 inches—pale brown, calcareous very gravelly silt loam
39 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 30 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Naff soils (10 percent)
• Palouse soils on north- and east-facing, concave slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The moderate rooting depth of the Almota soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.
• The sodicity of the subsoil of the Calouse soil causes some nutrients to become unavailable to plants.

Capability Classification

Calouse soil—3e, nonirrigated; Almota soil—4e, nonirrigated

20—Calouse-Endicott-Bryden complex, 2 to 6 percent slopes

Composition

Calouse soil and similar inclusions: 55 percent
Endicott soil and similar inclusions: 20 percent
Bryden soil and similar inclusions: 15 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 1,900 to 2,500 feet
Average annual precipitation: About 15 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Calouse Soil

Position on landform: Commonly on north- and east-facing slopes
Slope range: 2 to 6 percent
Typical profile:
0 to 10 inches—grayish brown silt loam

10 to 32 inches—brown and yellowish brown silt loam
32 to 68 inches—light yellowish brown, white, and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Slight

Characteristics of the Endicott Soil

Position on landform: Commonly on ridges and south- and west-facing slopes
Slope range: 2 to 6 percent
Typical profile:
0 to 15 inches—brown silt loam
15 to 22 inches—brown silt loam
22 to 29 inches—very pale brown, calcareous silt loam
29 to 38 inches—white, calcareous gravelly loam
38 to 60 inches—white, strongly cemented duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate above the duripan
Available water capacity: Moderate
Potential rooting depth: 28 to 40 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Bryden Soil

Description of areas: Small, circular slick spots
Position on landform: Commonly on ridges and south- and west-facing slopes
Slope range: 2 to 6 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 13 inches—dark brown silty clay loam
13 to 19 inches—brown silt loam
19 to 31 inches—brown and pale brown, calcareous silt loam
31 to 37 inches—white, calcareous very gravelly silt loam
37 to 60 inches—white, indurated duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate above the duripan
Potential rooting depth: 25 to 40 inches
Runoff: Medium
Hazard of water erosion: Severe
Sodicity: Moderate

Contrasting Inclusions

- Hatwai soils that occur as circular slick spots (10 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The hazard of erosion is a concern.
- The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
- The sodicity of the subsoil of the Calouse and Bryden soils causes some nutrients to become unavailable to plants.

Capability Classification

Calouse soil—2e, nonirrigated; Endicott and Bryden soils—4e, nonirrigated

21—Carlinton silt loam, 2 to 10 percent slopes

Composition

Carlinton soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Slope range: 2 to 10 percent
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 100 days

Characteristics of the Carlinton Soil

Typical profile:
0 to 8 inches—brown silt loam
8 to 22 inches—yellowish brown silt loam
22 to 26 inches—light yellowish brown and very pale brown silt loam
26 to 28 inches—light gray, mottled silt loam
28 to 50 inches—pale brown and light yellowish brown silty clay loam fragipan
50 to 61 inches—light yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through it

Available water capacity: Moderate
Potential rooting depth: 26 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 18 to 36 inches in February through May

Contrasting Inclusions

- Wilkins soils in draws and drainageways (10 percent)
- Larabee soils on south- and west-facing slopes (3 percent)
- Setters soils near canyons (2 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Grand fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—85 cubic feet per acre at 116 years of age
General management considerations:
- Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Grand fir/mallow ninebark
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

22—Carlinton silt loam, 10 to 20 percent slopes

Composition

Carlinton soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Slope range: 10 to 20 percent
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 100 days

Characteristics of the Carlinton Soil

Typical profile:
0 to 8 inches—brown silt loam
8 to 22 inches—yellowish brown silt loam
22 to 26 inches—light yellowish brown and very pale brown silt loam
26 to 28 inches—light gray, mottled silt loam
28 to 50 inches—pale brown and light yellowish brown silty clay loam fragipan
50 to 61 inches—light yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through it
Available water capacity: Moderate
Potential rooting depth: 26 to 36 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 18 to 36 inches in February through May

Contrasting Inclusions

- Cavendish soils on summits of ridges and on

south- and west-facing slopes (10 percent)
• Joel soils on north- and east-facing slopes of 12 to 25 percent (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• The short growing season limits the production of some crops.
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
• Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
• The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Grand fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—85 cubic feet per acre at 116 years of age
General management considerations:
• Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/mallow ninebark
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

23—Carlinton-Talmaks complex, 2 to 8 percent slopes

Composition

Carlinton soil and similar inclusions: 45 percent
Talmaks soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 4,350 to 4,500 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Carlinton Soil

Position on landform: Broad hilltops and shoulders
Slope range: 2 to 8 percent
Typical profile:
0 to 5 inches—grayish brown silt loam
5 to 32 inches—yellowish brown silt loam
32 to 36 inches—light yellowish brown silt loam
36 to 55 inches—light yellowish brown silty clay loam fragipan
55 to 60 inches—light yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through it
Available water capacity: Moderate
Potential rooting depth: 26 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 18 to 36 inches in February through May

Characteristics of the Talmaks Soil

Position on landform: Commonly on plane to concave slopes
Slope range: 2 to 8 percent
Typical profile:
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
Depth class: Very deep

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Seddow soils on south- and west-facing slopes of 6 to 20 percent (10 percent)
- Setters soils on summits (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- The hazard of erosion is a primary concern because of the moderate erodibility of the soils, limited depth of the Carlinton soil, and steepness of slope.
- The seasonal perched water table in the Carlinton soil and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Carlinton soil restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber on the Carlinton soil (CMAI): Ponderosa pine—116 cubic feet per acre at 40 years of age; Douglas fir—65 cubic feet per acre at 102 years of age; grand fir—98 cubic feet per acre at 112 years of age; western larch—not measured; lodgepole pine—not measured
Estimated average annual production of timber on the Talmaks soil (CMAI): Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
- Because of the fragipan and the seasonal perched water table, trees on the Carlinton soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Pastureland and Hayland

General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The fragipan in the Carlinton soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

24—Cavendish-Taney complex, 8 to 20 percent slopes

Composition

Cavendish soil and similar inclusions: 50 percent
Taney soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,600 to 4,000 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Cavendish Soil

Position on landform: Ridges and convex slopes, commonly south- and west-facing
Slope range: 8 to 20 percent
Typical profile:
0 to 8 inches—brown silt loam
8 to 30 inches—reddish brown and yellowish red silty clay loam
30 to 43 inches—yellowish red gravelly clay loam
43 inches—weathered basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Taney Soil

Position on landform: North- and east-facing, commonly concave slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown, mottled silt loam
23 to 29 inches—very pale brown and white, mottled silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through it
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Contrasting Inclusions

- Setters soils on convex slopes of 2 to 15 percent (5 percent)
- Wilkins soils near drainageways (5 percent)
- Joel soils on south- and west-facing slopes (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Douglas fir/common snowberry
Estimated average annual production of timber on the Cavendish soil (CMAI): Ponderosa pine—102 cubic feet per acre at 40 years of age; Douglas fir—73 cubic feet per acre at 99 years of age
Estimated average annual production of timber on the Taney soil (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- The limited rooting depth and the high content of coarse fragments in the Cavendish soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Cavendish soil may be limited because of droughtiness.

Grazeable Woodland

Natural potential plant community: Douglas fir/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

Cavendish soil—3e, nonirrigated; Taney soil—4e, nonirrigated

25—Chard silt loam, 2 to 10 percent slopes

Composition

Chard soil and similar inclusions: 95 percent
Contrasting inclusions: 5 percent

Setting

Landform: Alluvial terraces
Position on landform: Low terraces; broad ridges on higher, dissected terraces
Slope range: 2 to 10 percent
Elevation: 800 to 1,320 feet
Average annual precipitation: About 14 inches

Frost-free season (32 degrees F): About 180 days

Characteristics of the Chard Soil

Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Moderate

Contrasting Inclusions

• Lapwai soils near streams and drainageways (5 percent)

Major Uses

Cropland, building site development, rangeland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation.
• The hazard of erosion is a concern.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• This unit has few limitations for use as rangeland.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The sandy substratum may result in unstable cutbanks.
• Septic systems may function poorly because of the rapid permeability of the substratum.

Capability Classification

3e, nonirrigated

26—Chard silt loam, 10 to 25 percent slopes

Composition

Chard soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Dissected alluvial terraces
Slope range: 10 to 25 percent
Elevation: 740 to 1,360 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Chard Soil

Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Contrasting Inclusions

• Very deep soils that have a cobbly substratum and are on south- and west-facing slopes (5 percent)
• Very deep, sandy soils on terraces along the Snake River (5 percent)

Major Uses

Cropland, rangeland, building site development

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation.
• Because of the moderate erodibility of the soil and

the steepness of slope, the hazard of erosion is a primary concern.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• This unit has few limitations for use as rangeland.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The sandy substratum may result in unstable cutbanks.

Capability Classification

4e, nonirrigated

27—Chard silt loam, 25 to 45 percent slopes

Composition

Chard soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Dissected alluvial terraces
Slope range: 25 to 45 percent
Elevation: 740 to 1,360 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 175 days

Characteristics of the Chard Soil

Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Contrasting Inclusions

• Moderately deep soils in draws and on steep, convex slopes (10 percent)
• Limekiln soils on convex slopes and in draws (5 percent)

Major Uses

Rangeland, building site development, cropland

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The steepness of slope limits the use of construction equipment.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• The sandy substratum may result in unstable cutbanks.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

Capability Classification

7e, nonirrigated

28—Chard complex, 30 to 50 percent slopes

Composition

Chard soil and similar inclusions: 50 percent
Chard soil, moist, and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Dissected alluvial terraces
Elevation: 800 to 1,320 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 180 days

Characteristics of the Chard Soil

Position on landform: South- and west-facing slopes
Slope range: 30 to 50 percent
Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Characteristics of the Chard Soil, Moist

Position on landform: North- and east-facing slopes
Slope range: 30 to 50 percent
Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Contrasting Inclusions

- Limekiln soils on convex, south- and west-facing slopes (5 percent)
- Moderately deep soils on convex, south- and west-facing slopes (5 percent)

Major Uses

Rangeland, building site development, cropland

Rangeland

Natural potential plant community: Chard soil—bluebunch wheatgrass-Sandberg bluegrass; Chard soil, moist—Idaho fescue-bluebunch wheatgrass
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The steepness of slope limits the use of construction equipment.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
- The sandy substratum may result in unstable cutbanks.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

Capability Classification

7e, nonirrigated

29—Chard-Tammany complex, 20 to 45 percent slopes

Composition

Chard soil and similar inclusions: 50 percent
Tammany soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Dissected alluvial terraces
Elevation: 850 to 1,200 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Chard Soil

Slope range: 20 to 45 percent

Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Characteristics of the Tammany Soil

Position on landform: South- and west-facing slopes
Slope range: 20 to 45 percent
Typical profile:
0 to 4 inches—brown silt loam
4 to 17 inches—brown and yellowish brown very gravelly loam
17 to 29 inches—pale brown, calcareous extremely gravelly coarse sandy loam
29 to 60 inches—light gray, calcareous extremely gravelly coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, very rapid in the substratum
Available water capacity: Low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Sand and gravel at a depth of 25 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Moderately deep soils on south- and west-facing slopes of 30 to 50 percent (10 percent)

Major Uses

Cropland, rangeland, building site development

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation.
• Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.
• Because of the high content of coarse fragments, the Tammany soil is susceptible to droughtiness in dry years.
• The sodicity of the subsoil of the Chard soil causes some nutrients to become unavailable to plants.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The steepness of slope limits the use of construction equipment.
• The sandy substratum may result in unstable cutbanks.

Capability Classification

6e, nonirrigated

30—Chard-Urban land complex, gently sloping

Composition

Chard soil and similar inclusions: 60 percent
Urban land: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Alluvial terraces
Elevation: 740 to 1,360 feet
Average annual precipitation: About 13 inches
Frost-free season (32 degrees F): About 185 days

Characteristics of the Chard Soil

Slope range: 1 to 8 percent
Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Moderate

Characteristics of the Urban Land

Slope range: 1 to 4 percent
Description of areas: Streets, buildings, parking lots, and other structures in the city of Lewiston

Contrasting Inclusions

- Tammany soils in areas below an elevation of 1,100 feet (10 percent)

Major Use

Building site development

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

Capability Classification

Chard soil—3e, nonirrigated; Urban land—not assigned

31—Cramont silt loam, 2 to 10 percent slopes

Composition

Cramont soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus (fig. 7)
Position on landform: Broad ridges
Slope range: 2 to 10 percent
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Cramont Soil

Typical profile:
1 inch to 0—organic mat
0 to 2 inches—light brownish gray silt loam
2 to 14 inches—pale brown and light yellowish brown silt loam
14 to 65 inches—dark yellowish brown and brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Culdesac soils on concave, north-facing slopes (10 percent)
- Seddow soils on slopes of 8 to 20 percent (3 percent)
- Aquolls in drainageways (2 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63 cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured
General management considerations:
- This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Capability Classification

4e, nonirrigated

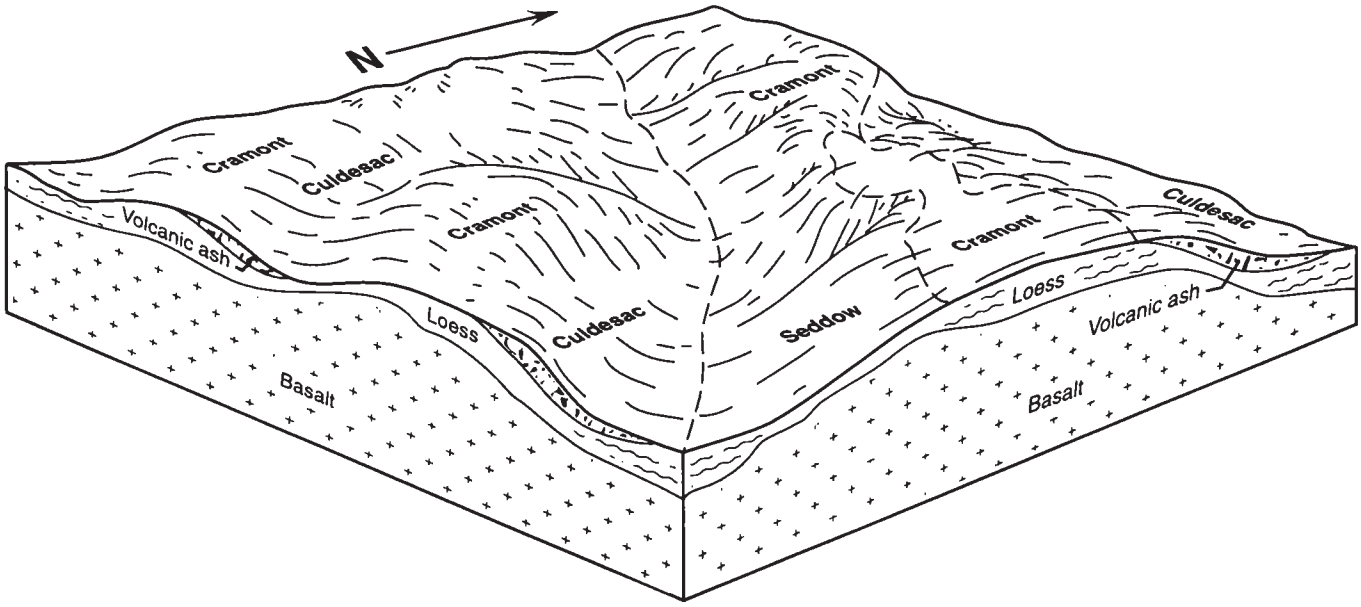


Figure 7.—Landscape relationships among the major soils in detailed soil map units 31, 32, and 33.

32—Cramont-Culdesac complex, 2 to 20 percent slopes

Composition

Cramont soil and similar inclusions: 55 percent
Culdesac soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus (fig. 7)
Elevation: 4,100 to 5,000 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Cramont Soil

Position on landform: Broad ridges and plane to convex slopes
Slope range: 2 to 10 percent
Typical profile:
1 inch to 0—organic mat
0 to 2 inches—light brownish gray silt loam
2 to 14 inches—pale brown and light yellowish brown silt loam
14 to 65 inches—dark yellowish brown and brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate or severe

Characteristics of the Culdesac Soil

Position on landform: North- and east-facing, concave slopes
Slope range: 10 to 20 percent
Typical profile:
2 inches to 0—organic mat
0 to 3 inches—yellowish brown silt loam
3 to 18 inches—light yellowish brown silt loam
18 to 54 inches—light yellowish brown and brown silty clay loam
54 to 60 inches—brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate

Contrasting Inclusions

- Seddow soils on south-facing slopes of 10 to 25 percent (10 percent)
- Shilla soils on north-facing slopes of 15 to 35 percent (3 percent)
- Aquolls in drainageways (2 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber on the Cramont soil (CMAI): Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63 cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured
Estimated average annual production of timber on the Culdesac soil (CMAI): Ponderosa pine—not measured; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—87 cubic feet per acre at 116 years of age; western larch—81 cubic feet per acre at 70 years of age; lodgepole pine—not measured
General management considerations:
• Because the volcanic ash surface layer of the Culdesac soil is fragile, excessive disturbance or compaction reduces productivity and seedling survival.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The volcanic ash surface layer of the Culdesac soil is easily compacted during wet periods.

Capability Classification

4e, nonirrigated

33—Cramont-Seddow complex, 10 to 25 percent slopes

Composition

Cramont soil and similar inclusions: 55 percent
Seddow soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus (fig. 7)
Elevation: 4,500 to 4,700 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Cramont Soil

Slope range: 10 to 20 percent
Typical profile:
1 inch to 0—organic mat
0 to 2 inches—light brownish gray silt loam
2 to 14 inches—pale brown and light yellowish brown silt loam
14 to 65 inches—dark yellowish brown and brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Seddow Soil

Position on landform: South- and west-facing slopes
Slope range: 15 to 25 percent
Typical profile:
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Culdesac soils on concave, north-facing slopes (10 percent)
• Aquolls in drainageways (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber on the Cramont soil (CMAI): Ponderosa pine—92 cubic feet per acre at 40 years of age; Douglas fir—63

cubic feet per acre at 102 years of age; grand fir—100 cubic feet per acre at 111 years of age; western larch—72 cubic feet per acre at 70 years of age; lodgepole pine—not measured

Estimated average annual production of timber on the Seddow soil (CMAI): Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured

General management considerations:

- The limited rooting depth and high content of coarse fragments in the Seddow soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Seddow soil may be limited because of droughtiness.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower

General management considerations:

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Capability Classification

4e, nonirrigated

34—Crowers silt loam, 50 to 80 percent slopes

Composition

Crowers soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Position on landform: North- and east-facing slopes
Slope range: 50 to 80 percent
Elevation: 740 to 2,800 feet
Average annual precipitation: About 15 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Crowers Soil

Typical profile:

0 to 10 inches—very dark grayish brown silt loam
10 to 31 inches—brown silt loam
31 to 41 inches—brown, calcareous very cobbly silt loam
41 to 62 inches—brown, calcareous cobbly silt loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Almota soils on convex slopes (10 percent)
- Oliphant soils on concave slopes (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Idaho fescue-bluebunch wheatgrass

General management considerations:

- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

35—Driscoll silt loam, 3 to 12 percent slopes

Composition

Driscoll soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad ridges and summits
Slope range: 3 to 12 percent
Elevation: 2,800 to 3,200 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Driscoll Soil

Typical profile:

0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay

46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 15 to 30 inches in January through April

Contrasting Inclusions

- Southwick soils on backslopes of 8 to 12 percent (10 percent)
- Wilkins soils in drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—132 cubic feet per acre at 40 years of age
General management considerations:
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

2e, nonirrigated

36—Driscoll-Larkin complex, 2 to 10 percent slopes

Composition

Driscoll soil and similar inclusions: 45 percent
Larkin soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,500 to 3,400 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Driscoll Soil

Position on landform: Shoulders and south- and west-facing slopes
Slope range: 2 to 8 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 15 to 30 inches in January through April

Characteristics of the Larkin Soil

Slope range: 2 to 10 percent
Typical profile:
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Bluesprin soils on south- and west-facing slopes of 6 to 18 percent (5 percent)
- Wilkins soils in drainageways (5 percent)
- Southwick soils on concave, north-facing slopes (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
Estimated average annual production of timber on the Driscoll soil (CMAI): Ponderosa pine—132 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Larkin soil (CMAI): Ponderosa pine—85 cubic feet per acre at 40 years of age
General management considerations:
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Driscoll soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

2e, nonirrigated

37—Endicott-Bryden complex, 2 to 6 percent slopes

Composition

Endicott soil and similar inclusions: 55 percent
Bryden soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,400 to 2,300 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Endicott Soil

Slope range: 2 to 6 percent
Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 20 inches—brown silt loam
20 to 30 inches—pale brown, calcareous silt loam
30 to 36 inches—white, calcareous gravelly silt loam
36 to 60 inches—white, strongly cemented duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate above the duripan
Available water capacity: Moderate
Potential rooting depth: 28 to 40 inches
Runoff: Slow
Hazard of water erosion: Severe

Characteristics of the Bryden Soil

Description of areas: Small, circular slick spots
Slope range: 2 to 6 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 13 inches—dark brown silty clay loam
13 to 19 inches—brown silt loam
19 to 31 inches—brown and pale brown, calcareous silt loam
31 to 37 inches—white, calcareous very gravelly silt loam
37 to 60 inches—white, indurated duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow above the duripan
Available water capacity: Moderate
Potential rooting depth: 25 to 40 inches
Runoff: Medium
Hazard of water erosion: Severe
Sodicity: Moderate

Contrasting Inclusions

- Soils that are sand and gravel below the duripan and are in the upper Tammany Creek Valley (5 percent)
- Stember soils on south- and west-facing slopes (5 percent)
- Oliphant soils on north- and east-facing slopes (5 percent)

Major Uses

Cropland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity.
- Because of the moderate erodibility of the soils, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.
- The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
- The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The moderate depth to the duripan interferes with excavation for basements and utilities.
- The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
- Septic systems may function poorly because of the limited soil depth.

Capability Classification

4e, nonirrigated

38—Endicott-Bryden complex, 6 to 12 percent slopes

Composition

Endicott soil and similar inclusions: 50 percent
Bryden soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,400 to 2,300 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Endicott Soil

Slope range: 6 to 12 percent
Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 20 inches—brown silt loam
20 to 30 inches—pale brown, calcareous silt loam
30 to 36 inches—white, calcareous gravelly silt loam
36 to 60 inches—white, strongly cemented duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate above the duripan
Available water capacity: Moderate
Potential rooting depth: 28 to 40 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Bryden Soil

Description of areas: Small, circular slick spots
Position on landform: Commonly on south-facing slopes
Slope range: 6 to 12 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 13 inches—dark brown silty clay loam
13 to 19 inches—brown silt loam
19 to 31 inches—brown and pale brown, calcareous silt loam
31 to 37 inches—white, calcareous very gravelly silt loam
37 to 60 inches—white, indurated duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow above the duripan
Available water capacity: Moderate
Potential rooting depth: 25 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Contrasting Inclusions

- Stember soils on south- and west-facing slopes (10 percent)
- Oliphant soils on north and east-facing slopes (5 percent)

Major Uses

Cropland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

• The sodicity of the Bryden soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The moderate depth to the duripan interferes with excavation for basements and utilities.
• The sodicity of the subsoil of the Bryden soil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.
• Septic systems may function poorly because of the limited soil depth.

Capability Classification

4e, nonirrigated

39—Endicott-Oliphant complex, 8 to 20 percent slopes

Composition

Endicott soil and similar inclusions: 50 percent
Oliphant soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,400 to 1,900 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Endicott Soil

Position on landform: Shoulders and upper backslopes
Slope range: 8 to 16 percent
Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 20 inches—brown silt loam
20 to 30 inches—pale brown, calcareous silt loam
30 to 36 inches—white, calcareous gravelly silt loam
36 to 60 inches—white, strongly cemented duripan
Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate above the duripan
Available water capacity: Moderate
Potential rooting depth: 28 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Oliphant Soil

Position on landform: Lower backslopes and footslopes
Slope range: 10 to 20 percent
Typical profile:
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

• Alpowa soils on slopes of 10 to 25 percent (5 percent)
• Stember soil on south- and west-facing, convex slopes and shoulders (5 percent)
• Bryden soils that occur as circular slick spots (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation and the limited available water capacity of the Endicott soil.
• Because of the moderate erodibility of the soils and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

4e, nonirrigated

40—Entic Haploxerolls, very steep

Composition

Entic Haploxerolls and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons

Position on landform: South- and west-facing slopes
Slope range: 40 to 80 percent
Elevation: 1,300 to 2,400 feet
Average annual precipitation: About 13 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Entic Haploxerolls

Representative profile:
0 to 8 inches—dark grayish brown, calcareous gravelly loam
8 to 17 inches—dark gray, calcareous gravelly loam
17 to 28 inches—gray, calcareous, weathered phyllite
28 inches—unweathered phyllite
Depth class: Shallow and moderately deep to weathered bedrock
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 12 to 30 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Soils that are very shallow to weathered phyllite and are on convex slopes (10 percent)
- Crowers soils on north- and east-facing slopes of 50 to 90 percent (10 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Bluebunch wheatgrass/plains pricklypear
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock. The shallow depth in some areas also limits the construction of improvements.
- The low available water capacity limits the production of forage.

Capability Classification

7e, nonirrigated

41—Gwin-Vollmer complex, 5 to 25 percent slopes

Composition

Gwin soil and similar inclusions: 45 percent
Vollmer soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Elevation: 2,500 to 3,800 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Gwin Soil

Position on landform: South- and west-facing, convex slopes and intermound areas of patterned ground
Slope range: 5 to 25 percent
Typical profile:
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Vollmer Soil

Position on landform: Plane to concave slopes and mounds in areas of patterned ground
Slope range: 5 to 25 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Uhlorn soils on slopes of 2 to 10 percent on summits and shoulders (10 percent)
- Kettenbach soils on convex slopes of 15 to 35 percent (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Gwin soil—bluebunch wheatgrass-Sandberg bluegrass; Vollmer soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
• The shallow depth and content of rock fragments in the surface layer of the Gwin soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
• The very low available water capacity of the Gwin soil limits the production of forage.

Capability Classification

Gwin soil—6e, nonirrigated; Vollmer soil—4e, nonirrigated

42—Haploxerolls, rolling

Composition

Haploxerolls and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Landslides
Slope range: 2 to 20 percent
Elevation: 800 to 1,300 feet
Average annual precipitation: About 13 inches
Frost-free season (32 degrees F): About 185 days

Characteristics of the Haploxerolls

Representative profile:
0 to 14 inches—very dark grayish brown silty clay loam
14 to 23 inches—olive brown silty clay loam
23 to 34 inches—light olive brown, calcareous silty clay loam
34 to 60 inches—light gray, calcareous gravelly clay loam
Depth class: Moderately deep to very deep
Drainage class: Well drained
Permeability: Moderate and moderately slow
Available water capacity: Moderate and high
Potential rooting depth: 30 to 60 inches or more
Runoff: Medium
Hazard of water erosion: Severe
Sodicity: Slight

Contrasting Inclusions

• Lickskillet soils (10 percent)

Major Uses

Building site development, rangeland

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.
• The sodicity of the subsoil causes some nutrients to become unavailable to plants.
• This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• This unit has few limitations for use as rangeland.

Capability Classification

4e, nonirrigated

43—Hooverton stony loam, 35 to 75 percent slopes

Composition

Hooverton soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: South- and west-facing backslopes
Slope range: 35 to 75 percent
Elevation: 2,800 to 5,300 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Hooverton Soil

Typical profile:
0 to 11 inches—very dark grayish brown stony loam
11 to 17 inches—brown very cobbly loam
17 to 35 inches—dark yellowish brown very cobbly clay loam and extremely cobbly clay loam
35 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Runoff: Very rapid

Hazard of water erosion: Very severe

Contrasting Inclusions

- Klickson soils on north- and east-facing slopes (10 percent)
- Gwin soils on convex shoulders of ridges (5 percent)
- Linville soils on concave, south- and west-facing slopes (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Idaho fescue
General management considerations:
- The steepness of slope and the rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The cold temperatures restrict plant growth in spring. The grazing season is limited to summer and fall.

Capability Classification

7e, nonirrigated

44—Immig very stony clay loam, 40 to 80 percent slopes

Composition

Immig soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: South- and west-facing slopes
Slope range: 40 to 80 percent
Elevation: 2,000 to 4,000 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Immig Soil

Typical profile:
0 to 5 inches—dark brown very stony clay loam
5 to 10 inches—dark brown gravelly clay loam
10 to 29 inches—dark brown and strong brown extremely gravelly clay
29 inches—greenstone
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Very low
Potential rooting depth: 26 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Linville soils on north- and east-facing slopes (10 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Bluebunch wheatgrass/arrowleaf balsamroot
General management considerations:
- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

45—Jacket silt loam, 3 to 12 percent slopes

Composition

Jacket soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus, canyon benches
Slope range: 3 to 12 percent
Elevation: 1,200 to 3,000 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Jacket Soil

Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High

Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Severe

Contrasting Inclusions

- Driscoll soils on convex, north-facing slopes (5 percent)
- Larkin soils on north-facing slopes (5 percent)
- Mallory soils on convex, south- and west-facing slopes (5 percent)

Major Uses

Cropland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Pastureland and Hayland

General management considerations:
- This unit has few limitations for use as pastureland and hayland.

Capability Classification

2e, nonirrigated

46—Jacket silt loam, 12 to 30 percent slopes

Composition

Jacket soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus, canyon benches
Position on landform: South-, east-, and west-facing slopes
Slope range: 12 to 30 percent
Elevation: 1,200 to 3,000 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Jacket Soil

Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Mallory soils on south- and west-facing slopes (10 percent)
- Driscoll soils on convex slopes of 8 to 15 percent (5 percent)

Major Uses

Cropland, rangeland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Common snowberry/Idaho fescue
General management considerations:
- This unit has few limitations for use as rangeland.

Pastureland and Hayland

General management considerations:
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

Capability Classification

4e, nonirrigated

47—Jacket-Larkin complex, 20 to 50 percent slopes

Composition

Jacket soil and similar inclusions: 45 percent
Larkin soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,400 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Jacket Soil

Position on landform: Convex slopes
Slope range: 20 to 50 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Larkin Soil

Position on landform: Plane to concave slopes
Slope range: 20 to 50 percent
Typical profile:
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Driscoll soils on shoulders and ridges (5 percent)
- Keuterville soils on convex slopes of 30 to 60 percent (5 percent)
- Klickson soils on north-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland, cropland

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Jacket soil (CMAI): Ponderosa pine—128 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Larkin soil (CMAI): Ponderosa pine—85 cubic feet per acre at 40 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

Capability Classification

7e, nonirrigated

48—Joel silt loam, 1 to 8 percent slopes

Composition

Joel soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Slope range: 1 to 8 percent
Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Joel Soil

Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow

Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight

Contrasting Inclusions

- Boles soils on summits and toeslopes (5 percent)
- Wilkins soils in drainageways (5 percent)

Major Uses

Woodland, grazeable woodland, pastureland, hayland, cropland

Woodland

Natural potential plant community: Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
- This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Douglas fir/mallow ninebark
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Pastureland and Hayland

General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.

Capability Classification

3e, nonirrigated

49—Joel silt loam, 8 to 16 percent slopes

Composition

Joel soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Plane to concave slopes
Slope range: 8 to 16 percent
Elevation: 4,000 to 4,600 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Joel Soil

Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

- Boles soils on summits and toeslopes of 1 to 10 percent (10 percent)
- Sweiting soils on south- and west-facing slopes of 10 to 20 percent (5 percent)

Major Uses

Cropland, pastureland, hayland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

Woodland

Natural potential plant community: Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—122 cubic feet per acre

at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
• This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Douglas fir/mallow ninebark
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Capability Classification

3e, nonirrigated

50—Joel-Setters complex, 2 to 10 percent slopes

Composition

Joel soil and similar inclusions: 65 percent
Setters soil and similar inclusions: 20 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 3,300 to 3,700 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Joel Soil

Slope range: 2 to 10 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 18 inches—grayish brown and brown silt loam
18 to 25 inches—pale brown silt loam
25 to 66 inches—light yellowish brown and light brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Characteristics of the Setters Soil

Position on landform: Summits and south- and west-facing slopes
Slope range: 2 to 8 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Silty clay subsoil at a depth of 18 to 24 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 14 to 22 inches in February through April

Contrasting Inclusions

• Taney soils on concave, north- and east-facing slopes (10 percent)
• Wilkins soils in drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• The hazard of erosion is a concern.
• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops.

Woodland

Natural potential plant community: Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry
Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age
Estimated average annual production of timber on the Setters soil (CMAI): Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
General management considerations:
• Because of the silty clay subsoil and the seasonal perched water table, trees on the Setters soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Joel soil—

Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

3e, nonirrigated

51—Joel-Setters complex, 10 to 20 percent slopes

Composition

Joel soil and similar inclusions: 55 percent
Setters soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 4,000 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Joel Soil

Slope range: 12 to 20 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 18 inches—grayish brown and brown silt loam
18 to 25 inches—pale brown silt loam
25 to 66 inches—light yellowish brown and light brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate

Characteristics of the Setters Soil

Position on landform: Shoulders and lower lying knobs
Slope range: 10 to 14 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Silty clay subsoil at a depth of 18 to 24 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 14 to 22 inches in February through April

Contrasting Inclusions

• Taney soils on concave slopes (10 percent)
• Cavendish soils on south- and west-facing slopes of 15 to 25 percent (3 percent)
• Wilkins soils near drainageways (2 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops.

Woodland

Natural potential plant community: Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry
Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age
Estimated average annual production of timber on the Setters soil (CMAI): Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
General management considerations:
• Because of the silty clay subsoil and the seasonal

perched water table, trees on the Setters soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Joel soil—Douglas fir/mallow ninebark; Setters soil—Douglas fir/common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The silty clay subsoil of the Setters soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

52—Johnson loam, 45 to 65 percent slopes

Composition

Johnson soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: North- and east-facing slopes
Slope range: 45 to 65 percent
Elevation: 1,000 to 3,000 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Johnson Soil

Typical profile:
2 inches to 0—organic mat
0 to 10 inches—brown loam
10 to 50 inches—brown and dark brown clay loam
50 to 63 inches—brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Dragnot soils on south- and west-facing slopes (10 percent)
• Rock outcrop near drainageways (5 percent)
• Uvi soils on concave slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Douglas fir/mallow ninebark
General management considerations:
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

53—Johnson-Dragnot association, 40 to 70 percent slopes

Composition

Johnson soil and similar inclusions: 45 percent
Dragnot soil and similar inclusions: 20 percent
Dragnot soil, dry, and similar inclusions: 20 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 1,200 to 3,000 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Johnson Soil

Position on landform: North- and east-facing slopes

Slope range: 40 to 70 percent
Typical profile:
2 inches to 0—organic mat
0 to 10 inches—brown loam
10 to 50 inches—brown and dark brown clay loam
50 to 63 inches—brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Dragnot Soil

Position on landform: South- and west-facing backslopes and footslopes
Slope range: 40 to 70 percent
Typical profile:
0 to 4 inches—brown stony loam
4 to 11 inches—brown loam
11 to 18 inches—brown fine gravelly loam
18 to 31 inches—brown very gravelly sandy loam
31 inches—granodiorite
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Dragnot Soil, Dry

Position on landform: South- and west-facing backslopes and footslopes
Slope range: 40 to 70 percent
Typical profile:
0 to 4 inches—brown stony loam
4 to 18 inches—brown loam
18 to 31 inches—brown very gravelly sandy loam
31 inches—granodiorite
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Rock outcrop on south- and west-facing slopes (5 percent)
- Ahsahka soils on summits of ridges and on benches and knobs (5 percent)
- Uvi soils on north- and east-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland, rangeland

Woodland

Natural potential plant community: Johnson soil—Douglas fir/mallow ninebark; Dragnot soil—ponderosa pine/common snowberry
Estimated average annual production of timber on the Johnson soil (CMAI): Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
Estimated average annual production of timber on the Dragnot soil (CMAI): Ponderosa pine—85 cubic feet per acre at 40 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The droughtiness of the Dragnot soil limits productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Dragnot soil are susceptible to windthrow.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees on the Johnson soil.

Grazeable Woodland

Natural potential plant community: Johnson soil—Douglas fir/mallow ninebark; Dragnot soil—ponderosa pine/common snowberry
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Rangeland

Natural potential plant community: Dragnot soil, dry—common snowberry/bluebunch wheatgrass
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

54—Johnson-Kruse complex, 5 to 40 percent slopes

Composition

Johnson soil and similar inclusions: 45 percent
Kruse soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Elevation: 3,900 to 4,640 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Johnson Soil

Position on landform: Gently sloping hillsides and summits
Slope range: 5 to 25 percent
Typical profile:
1 inch to 0—organic mat
0 to 13 inches—brown loam
13 to 20 inches—light yellowish brown loam
20 to 60 inches—light yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Kruse Soil

Position on landform: Commonly on north- and east-facing slopes
Slope range: 10 to 40 percent
Typical profile:
1 inch to 0—organic mat
0 to 3 inches—brown loam
3 to 16 inches—light yellowish brown and pale brown loam
16 to 49 inches—yellowish brown, brown, and strong brown clay loam
49 to 65 inches—light brown coarse sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Labuck soils on south- and west-facing slopes (10 percent)
- Ahsahka soils on convex, south- and west-facing slopes (3 percent)
- Uvi soils on north- and east-facing, concave slopes (2 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland, hayland

Woodland

Natural potential plant community: Johnson soil—Douglas fir/common snowberry; Kruse soil—grand fir/longtube twinflower
Estimated average annual production of timber on the Johnson soil (CMAI): Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
Estimated average annual production of timber on the Kruse soil (CMAI): Ponderosa pine—118 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—106 cubic feet per acre at 109 years of age; western larch—not measured
General management considerations:
- The hazard of erosion is a concern.

Grazeable Woodland

Natural potential plant community: Johnson soil—Douglas fir/common snowberry; Kruse soil—grand fir/longtube twinflower
General management considerations:
- The characteristic understory plant community on the Kruse soil produces very little forage for livestock when the canopy is closed.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

Capability Classification

4e, nonirrigated

55—Johnson-Labuck complex, 15 to 35 percent slopes

Composition

Johnson soil and similar inclusions: 50 percent
Labuck soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Elevation: 3,700 to 4,640 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Johnson Soil

Slope range: 15 to 25 percent
Typical profile:
1 inch to 0—organic mat
0 to 13 inches—brown loam
13 to 20 inches—light yellowish brown loam
20 to 60 inches—light yellowish brown clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Labuck Soil

Position on landform: Convex slopes on shoulders, knobs, and ridges
Slope range: 15 to 35 percent
Typical profile:
0 to 15 inches—brown coarse sandy loam
15 to 26 inches—light yellowish brown fine gravelly coarse sandy loam
26 to 60 inches—multicolored, weathered granodiorite
Depth class: Moderately deep to weathered rock
Drainage class: Well drained
Permeability: Moderately rapid
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Kruse soils on footslopes and north- and east-facing slopes (5 percent)
- Dragnot soils that are drier and are on south-facing slopes of 20 to 45 percent (5 percent)
- Ahsahka soils on south- and west-facing, convex slopes (3 percent)
- Rock outcrop on convex ridges and knobs (2 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland, hayland

Woodland

Natural potential plant community: Douglas fir/common snowberry
Estimated average annual production of timber on the Johnson soil (CMAI): Ponderosa pine—114 cubic feet per acre at 40 years of age; Douglas fir—56 cubic feet per acre at 105 years of age
Estimated average annual production of timber on the Labuck soil (CMAI): Ponderosa pine—94 cubic feet per acre at 40 years of age; Douglas fir—52 cubic feet per acre at 102 years of age
General management considerations:
- The droughtiness of the Labuck soil limits productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Labuck soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Douglas fir/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Labuck soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate available water capacity of the Labuck soil limits the production of forage and the

choice of suitable plant species. Irrigation may be needed for maximum production of forage.
• The moderate rooting depth of the Labuck soil limits the production of forage and results in droughtiness in dry years.

Capability Classification

Johnson soil—4e, nonirrigated; Labuck soil—6e, nonirrigated

56—Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded

Composition

Joseph soil and similar inclusions: 50 percent
Tombeall soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Flood plains
Elevation: 800 to 1,200 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 165 days

Characteristics of the Joseph Soil

Slope range: 0 to 2 percent
Typical profile:
0 to 10 inches—grayish brown extremely cobbly loamy coarse sand
10 to 26 inches—grayish brown extremely cobbly loamy coarse sand
26 to 36 inches—grayish brown extremely cobbly sand
36 to 60 inches—grayish brown extremely gravelly coarse sand
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Very rapid
Available water capacity: Very low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 36 to 60 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 36 to 60 inches in December through June
Frequency of flooding: Occasional in December through June

Characteristics of the Tombeall Soil

Slope range: 0 to 2 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—dark grayish brown silt loam
17 to 28 inches—dark grayish brown, mottled sandy loam
28 to 35 inches—brown, mottled very gravelly sandy loam
35 to 60 inches—grayish brown extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 12 to 30 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 12 to 30 inches in February through April
Frequency of flooding: Occasional in December through June

Contrasting Inclusions

• Bridgewater soils on higher terraces (5 percent)
• Lapwai soils on higher terraces (5 percent)
• Aquents on low flood plains (5 percent)

Major Uses

Pastureland, hayland, rangeland

Pastureland and Hayland

General management considerations:
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage as a result of livestock trampling.
• The high content of cobbles in the surface layer of the Joseph soil limits some tillage and seeding operations.

Rangeland

Natural potential plant community: Joseph soil—black cottonwood/wildrye; Tombeall soil—tufted hairgrass-sedge
General management considerations:
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.
• Flooding in spring may prevent access by livestock.

Capability Classification

Joseph soil—6s, nonirrigated; Tombeall soil—3w, nonirrigated

57—Kettenbach-Gwin complex, 35 to 75 percent slopes

Composition

Kettenbach soil and similar inclusions: 40 percent
Kettenbach soil, moist, and similar inclusions: 20 percent
Gwin soil and similar inclusions: 20 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,200 to 4,000 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 150 days

Characteristics of the Kettenbach Soil

Position on landform: South- and west-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Kettenbach Soil, Moist

Position on landform: Dominantly west- and northwest-facing slopes and some southeast-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 5 inches—very dark grayish brown stony silt loam
5 to 15 inches—dark grayish brown very gravelly silty clay loam
15 to 30 inches—brown extremely gravelly silty clay loam
30 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Gwin Soil

Position on landform: Ridges and convex slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Linville soils on north- and east-facing slopes and on footslopes (10 percent)
- Rock outcrop on ridges and convex slopes (5 percent)
- Flybow soils on ridges and convex slopes (3 percent)
- Waha soils on concave slopes of 20 to 45 percent (2 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot; Kettenbach soil, moist—Idaho fescue-bluebunch wheatgrass; Gwin soil—bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
- The steepness of slope, shallow depth of the Gwin soil, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Gwin soil limits the production of forage.

Capability Classification

7e, nonirrigated

58—Kettenbach-Keuterville association, 35 to 75 percent slopes

Composition

Kettenbach soil and similar inclusions: 50 percent
Keuterville soil and similar inclusions: 30 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,200 to 3,000 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Kettenbach Soil

Position on landform: South- and west-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Keuterville Soil

Position on landform: North- and east-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Klickson soils on north-facing slopes (10 percent)
- Gwin soils on south-facing, convex slopes and on ridges (5 percent)
- Rock outcrop on shoulders and convex ridges (5 percent)

Major Uses

Rangeland, woodland, grazeable woodland

Rangeland

Natural potential plant community: Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot
General management considerations:
- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—90 cubic feet per acre at 40 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The high content of rock fragments in the Keuterville soil restricts the available water capacity and thus limits productivity.

Grazeable Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

59—Kettenbach-Rock outcrop complex, 45 to 90 percent slopes

Composition

Kettenbach soil and similar inclusions: 45 percent

Rock outcrop: 35 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,200 to 3,500 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 150 days

Characteristics of the Kettenbach Soil

Position on landform: Plane to concave, south- and west-facing slopes
Slope range: 45 to 90 percent
Typical profile:
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Position on landform: South- and west-facing ridges and shoulders
Slope range: 45 to 90 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Linville soils on footslopes, commonly on north- and east-facing slopes (5 percent)
- Talus and rubble land near areas of Rock outcrop (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot; Rock outcrop—little or no vegetation
General management considerations:
- The steepness of slope, the rock fragments in the surface layer of the Kettenbach soil, and the areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

Kettenbach soil—7e, nonirrigated; Rock outcrop—not assigned

60—Keuterville gravelly silt loam, 10 to 25 percent slopes

Composition

Keuterville soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons, canyon benches
Slope range: 10 to 25 percent
Elevation: 1,800 to 3,600 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Keuterville Soil

Typical profile:
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Rock outcrop on steep, convex slopes (5 percent)
- Kettenbach soils on convex, south- and west-facing slopes (5 percent)
- Klickson soils on north-facing slopes (5 percent)
- Meland soils on south-facing canyon benches (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

• The high content of rock fragments results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—90 cubic feet per acre at 40 years of age
General management considerations:
• The high content of rock fragments restricts the available water capacity and thus limits productivity.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• This unit has few limitations for use as pastureland and hayland.

Capability Classification

4e, nonirrigated

61—Keuterville gravelly silt loam, 25 to 50 percent slopes

Composition

Keuterville soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: South- and west-facing slopes
Slope range: 25 to 50 percent
Elevation: 1,800 to 3,000 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Keuterville Soil

Typical profile:
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Severe

Contrasting Inclusions

• Kettenbach soils on convex slopes (10 percent)
• Rock outcrop on convex slopes (5 percent)
• Jacket soils on gentle, south-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—90 cubic feet per acre at 40 years of age
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• The high content of rock fragments restricts the available water capacity and thus limits productivity.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/ common snowberry
General management considerations:
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

62—Keuterville-Rock outcrop complex, 35 to 90 percent slopes

Composition

Keuterville soil and similar inclusions: 65 percent
Rock outcrop: 20 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons

Elevation: 1,200 to 3,600 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Keuterville Soil

Position on landform: South- and west-facing slopes
Slope range: 35 to 90 percent
Typical profile:
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Position on landform: Convex, south- and west-facing slopes
Slope range: 35 to 90 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

- Kettenbach soils on dry, convex slopes (10 percent)
- Gwin soils on convex slopes near areas of Rock outcrop (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry; Rock outcrop—little or no vegetation
Estimated average annual production of timber on the Keuterville soil (CMAI): Ponderosa pine—90 cubic feet per acre at 40 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The high content of rock fragments in the Keuterville soil restricts the available water capacity and thus limits productivity.
- The areas of Rock outcrop may cause breakage of timber and hinder yarding.

Grazeable Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry; Rock outcrop—little or no vegetation
General management considerations:
- The steepness of slope and the areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

Keuterville soil—7e, nonirrigated; Rock outcrop—not assigned

63—Klickson silt loam, 15 to 35 percent slopes

Composition

Klickson soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Position on landform: Canyon rims and footslopes
Slope range: 15 to 35 percent
Elevation: 1,500 to 4,000 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Klickson Soil

Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Agatha soils on northeast-facing slopes (10 percent)
- Larabee soils (5 percent)

Major Uses

Woodland, grazeable woodland, pastureland, hayland

Woodland

Natural potential plant community: Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
General management considerations:
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Douglas fir/mallow ninebark
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

Capability Classification

6e, nonirrigated

64—Klickson silt loam, 35 to 90 percent slopes

Composition

Klickson soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: North- and east-facing slopes
Slope range: 35 to 90 percent
Elevation: 1,500 to 3,800 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Klickson Soil

Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Rock outcrop (5 percent)
• Rubble land on slopes of 50 to 100 percent (5 percent)
• Hooverton soils on convex, south- and west-facing slopes (5 percent)
• Larabee soils on convex backslopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Douglas fir/mallow ninebark
General management considerations:
• The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

65—Klickson-Agatha association, 35 to 75 percent slopes

Composition

Klickson soil and similar inclusions: 45 percent
Agatha soil and similar inclusions: 35 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,500 to 4,500 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Klickson Soil

Position on landform: Northwest- and southeast-facing slopes
Slope range: 35 to 75 percent
Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Agatha Soil

Position on landform: North- and east-facing slopes
Slope range: 35 to 75 percent
Typical profile:
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Larabee soils on convex backslopes (10 percent)
- Keuterville soils on south- and west-facing, convex slopes (5 percent)
- Webbridge soils on footslopes and northeast-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Agatha soil—grand fir/mallow ninebark
Estimated average annual production of timber on the Klickson soil (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
Estimated average annual production of timber on the Agatha soil (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Agatha soil—grand fir/mallow ninebark
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The characteristic understory plant community on the Agatha soil produces very little forage for livestock when the canopy is closed.

Capability Classification

7e, nonirrigated

66—Klickson-Hooverton association, 35 to 90 percent slopes

Composition

Klickson soil and similar inclusions: 50 percent

Hooverton soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 2,800 to 5,300 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 75 days

Characteristics of the Klickson Soil

Position on landform: North- and east-facing slopes
Slope range: 35 to 90 percent
Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Hooverton Soil

Position on landform: South- and west-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 11 inches—very dark grayish brown stony loam
11 to 17 inches—brown very cobbly loam
17 to 35 inches—dark yellowish brown very cobbly clay loam and extremely cobbly clay loam
35 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 24 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Flybow soils on convex ridges (5 percent)
- Larabee soils on northeast- and northwest-facing ridges (5 percent)
- Rock outcrop on south- and west-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland, rangeland (fig. 8)

Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark
Estimated average annual production of timber (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Rangeland

Natural potential plant community: Hooverton soil—bluebunch wheatgrass-Idaho fescue
General management considerations:
- The steepness of slope and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The cold temperatures restrict plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

Capability Classification

7e, nonirrigated

67—Klickson-Rock outcrop complex, 45 to 90 percent slopes

Composition

Klickson soil and similar inclusions: 55 percent

Figure 8.—An area of Klickson-Hooverton association, 35 to 90 percent slopes. The Klickson soil is in the forested areas, and the Hooverton soil is on the south-facing slopes, in the areas of rangeland.

Rock outcrop: 25 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,500 to 4,500 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Klickson Soil

Position on landform: North- and east-facing, plane to concave backslopes
Slope range: 45 to 90 percent
Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Position on landform: Convex slopes and areas near canyon rims
Slope range: 45 to 90 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

- Agatha soils on northeast-facing slopes (10 percent)
- Larabee soils (10 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Rock outcrop—little or no vegetation
Estimated average annual production of timber on the Klickson soil (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
General management considerations:
• Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
• Rock outcrop may cause breakage of timber and hinder yarding.
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Rock outcrop—little or no vegetation
General management considerations:
• The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

Klickson soil—7e, nonirrigated; Rock outcrop—not assigned

68—Klickson-Uptmor complex, 15 to 45 percent slopes

Composition

Klickson soil and similar inclusions: 45 percent
Uptmor soil and similar inclusions: 35 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons and canyon benches
Elevation: 2,700 to 4,100 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Klickson Soil

Position on landform: Convex slopes
Slope range: 25 to 45 percent
Typical profile:
1 inch to 0—organic mat
0 to 7 inches—grayish brown silt loam
7 to 15 inches—brown gravelly silt loam
15 to 61 inches—brown very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Uptmor Soil

Position on landform: Plane to concave slopes
Slope range: 15 to 30 percent
Typical profile:
0.5 inch to 0—organic mat
0 to 6 inches—brown silt loam
6 to 15 inches—brown clay loam
15 to 26 inches—brown clay
26 to 47 inches—brown gravelly clay and cobbly clay
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: 40 to 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

• Joel soils on concave slopes (10 percent)
• Larabee soils on convex slopes (10 percent)

Major Uses

Woodland, grazeable woodland, pastureland, hayland

Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Uptmor soil—Douglas fir/common snowberry
Estimated average annual production of timber on the Klickson soil (CMAI): Ponderosa pine—99 cubic feet per acre at 40 years of age; Douglas fir—67 cubic feet per acre at 101 years of age
Estimated average annual production of timber on the Uptmor soil (CMAI): Ponderosa pine—77 cubic

feet per acre at 40 years of age; Douglas fir—47 cubic feet per acre at 109 years of age
General management considerations:
• When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees on the Klickson soil.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Klickson soil—Douglas fir/mallow ninebark; Uptmor soil—Douglas fir/common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

Capability Classification

6e, nonirrigated

69—Kruse loam, 20 to 35 percent slopes

Composition

Kruse soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Slope range: 20 to 35 percent
Elevation: 3,200 to 3,440 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 100 days

Characteristics of the Kruse Soil

Typical profile:
1 inch to 0—organic mat
0 to 3 inches—brown loam
3 to 16 inches—light yellowish brown and pale brown loam
16 to 49 inches—yellowish brown, brown, and strong brown clay loam
49 to 65 inches—light brown coarse sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

• Ahsahka soils on toeslopes (10 percent)
• Agatha soils on convex slopes (5 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland, hayland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Ponderosa pine—118 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age; grand fir—106 cubic feet per acre at 109 years of age; western larch—not measured
General management considerations:
• This unit has few limitations for use as woodland.
• Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• The short growing season limits the production of some crops.
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
• The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.

Capability Classification

6e, nonirrigated

70—Lapwai-Bridgewater complex, 1 to 4 percent slopes

Composition

Lapwai soil and similar inclusions: 60 percent
Bridgewater soil and similar inclusions: 25 percent
Contrasting inclusions: 15 percent

Setting

Landform: Stream terraces (fig. 9)
Elevation: 750 to 1,200 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 165 days

Characteristics of the Lapwai Soil

Slope range: 1 to 4 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 28 inches—grayish brown and brown silt loam
28 to 35 inches—pale brown loam
35 to 60 inches—brown, calcareous very gravelly sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight
Frequency of flooding: Rare

Characteristics of the Bridgewater Soil

Position on landform: Commonly in slightly higher, convex areas
Slope range: 1 to 4 percent
Typical profile:
0 to 16 inches—dark brown extremely gravelly sandy loam
16 to 22 inches—brown extremely gravelly loam
22 to 34 inches—brown extremely cobbly sandy loam
34 to 60 inches—dark grayish brown extremely gravelly loamy coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, very rapid in the lower part
Available water capacity: Very low
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight
Frequency of flooding: Rare

Contrasting Inclusions

- Tombeall soils on lower stream terraces and flood plains (5 percent)
- Wistona soils along the Clearwater River (5 percent)
- Aquents on flood plains and at the edge of stream channels (3 percent)
- Very deep, sandy soils along the Snake and Clearwater Rivers (2 percent)

Major Uses

Cropland, pastureland, hayland, building site development

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The coarse fragments in the surface layer of the Bridgewater soil interfere with some tillage operations.
- The high content of coarse fragments restricts the available water capacity of the Bridgewater soil.

Pastureland and Hayland

General management considerations:
- The high content of gravel in the surface layer of the Bridgewater soil limits some tillage and seeding operations.
- The restricted available water capacity of the Bridgewater soil limits the production of forage and the choice of suitable plant species. Irrigation may be needed for maximum production of forage.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sandy substratum of the Bridgewater soil may result in unstable cutbanks.
- Septic systems in the Bridgewater soil may function poorly because of the very rapid permeability of the substratum.

Capability Classification

Lapwai soil—2w, nonirrigated; Bridgewater soil—6s, nonirrigated

71—Larabee loam, 4 to 20 percent slopes

Composition

Larabee soil and similar inclusions: 85 percent

Figure 9.—An area of Lapwai-Bridgewater complex, 1 to 4 percent slopes, on a terrace of Cottonwood Creek, in foreground. Kettenbach-Keuterville association, 35 to 75 percent slopes, in background.

Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus
Slope range: 4 to 20 percent
Elevation: 3,800 to 4,200 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Larabee Soil

Typical profile:
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam

29 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate

Contrasting Inclusions

- Sweiting soils on mounds in areas of patterned ground and on summits (5 percent)
- Gwin soils on convex shoulders, dominantly on south- and west-facing slopes (5 percent)
- Zaza soils between mounds in areas of patterned ground (3 percent)
- Joel soils on concave slopes (2 percent)

Major Uses

Woodland, grazeable woodland, pastureland, hayland

Woodland

Natural potential plant community: Douglas fir/ common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
General management considerations:
- The restricted rooting depth and high content of coarse fragments limit the amount of water available for tree growth and thus limit productivity.
- Reforestation may be limited because of droughtiness.
- Because of the moderate rooting depth, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Douglas fir/ common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate rooting depth limits the production of forage and results in droughtiness in dry years.

Capability Classification

4e, nonirrigated

72—Larabee-Gwin association, 35 to 75 percent slopes

Composition

Larabee soil and similar inclusions: 50 percent
Gwin soil and similar inclusions: 30 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 3,400 to 4,800 feet
Average annual precipitation: About 27 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Larabee Soil

Position on landform: Plane to concave, commonly northwest- and southeast-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam
29 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 36 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Gwin Soil

Position on landform: Convex slopes and ridges, commonly on south- and southwest-facing slopes
Slope range: 35 to 75 percent
Typical profile:
0 to 6 inches—brown very stony silt loam
6 to 12 inches—brown extremely gravelly silty clay loam
12 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Hooverton soils on south- and west-facing slopes (10 percent)

- Klickson soils on north- and east-facing slopes (5 percent)
- Mallory soils on south- and west-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland, rangeland

Woodland

Natural potential plant community: Larabee soil—Douglas fir/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
General management considerations:
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- The restricted rooting depth and high content of coarse fragments in the Larabee soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Larabee soil may be limited because of droughtiness.
- Because of the moderate rooting depth, trees on the Larabee soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Larabee soil—Douglas fir/common snowberry
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Rangeland

Natural potential plant community: Gwin soil—bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
- The steepness of slope, rock fragments in the surface layer, and shallow depth of the Gwin soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Gwin soil limits the production of forage.
- The cold temperatures limit plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

Capability Classification

7e, nonirrigated

73—Larabee-Zaza-Seddow complex, 10 to 40 percent slopes

Composition

Larabee soil and similar inclusions: 45 percent
Zaza soil and similar inclusions: 25 percent
Seddow soil and similar inclusions: 15 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus
Elevation: 4,400 to 5,300 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 65 days

Characteristics of the Larabee Soil

Position on landform: South- and west-facing slopes
Slope range: 10 to 40 percent
Typical profile:
0 to 4 inches—brown loam
4 to 10 inches—brown gravelly silt loam
10 to 20 inches—brown very gravelly silt loam
20 to 29 inches—brown extremely gravelly clay loam
29 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 36 inches
Runoff: Very rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Zaza Soil

Position on landform: Shoulders on south- and west-facing slopes
Slope range: 10 to 30 percent
Typical profile:
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low

Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Seddow Soil

Position on landform: Broad mounds and footslopes on south- and west-facing slopes
Slope range: 10 to 40 percent
Typical profile:
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Maloney soils on mounds in areas of patterned ground (10 percent)
- Shilla soils on hills and ridgetops (5 percent)

Major Uses

Woodland, grazeable woodland, rangeland

Woodland

Natural potential plant community: Larabee soil—Douglas fir/common snowberry; Seddow soil—grand fir/longtube twinflower
Estimated average annual production of timber on the Larabee soil (CMAI): Ponderosa pine—72 cubic feet per acre at 40 years of age; Douglas fir—36 cubic feet per acre at 113 years of age
Estimated average annual production of timber on the Seddow soil (CMAI): Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
- The droughtiness of the Larabee soil limits productivity and the survival of seedlings.
- The restricted rooting depth and high content of coarse fragments in the Larabee soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Larabee soil may be limited because of droughtiness.
- Because of the moderate rooting depth, trees on the Larabee soil are susceptible to windthrow.
- Erosion is a concern on the Seddow soil. Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Larabee soil—Douglas fir/common snowberry; Seddow soil—grand fir/longtube twinflower
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community on the Seddow soil produces very little forage for livestock when the canopy is closed.

Rangeland

Natural potential plant community: Zaza soil—Sandberg bluegrass/forbs
General management considerations:
- The shallow depth and content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.
- The cold temperatures of the Zaza soil limit plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

Capability Classification

6e, nonirrigated

74—Larkin-Driscoll complex, 10 to 20 percent slopes

Composition

Larkin soil and similar inclusions: 50 percent
Driscoll soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,400 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Larkin Soil

Position on landform: Plane to concave slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Driscoll Soil

Position on landform: Convex shoulders and footslopes
Slope range: 10 to 16 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 15 to 30 inches in January through April

Contrasting Inclusions

- Bluesprin soils on south- and west-facing slopes of 10 to 25 percent (10 percent)
- Southwick soils on plane to concave slopes (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Larkin soil (CMAI): Ponderosa pine—85 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Driscoll soil (CMAI): Ponderosa pine—132 cubic feet per acre at 40 years of age
General management considerations:
- Because of the abrupt silty clay subsoil and the seasonal perched water table, trees on the Driscoll soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

75—Latahco-Thatuna complex, 0 to 3 percent slopes

Composition

Latahco soil and similar inclusions: 55 percent
Thatuna soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Drainageways and toeslopes of hills on plateaus
Elevation: 2,200 to 3,200 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Latahco Soil

Position on landform: Drainageways
Slope range: 0 to 2 percent
Typical profile:
0 to 13 inches—very dark grayish brown silt loam
13 to 22 inches—very dark gray silt loam
22 to 35 inches—light brownish gray and white silt loam
35 to 43 inches—grayish brown, mottled silt loam
43 to 60 inches—pale brown, mottled silty clay loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silt loam subsoil at a depth of 18 to 35 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 18 to 34 inches in February through May
Frequency of flooding: Occasional in February through April

Characteristics of the Thatuna Soil

Position on landform: Toeslopes above drainageways
Slope range: 1 to 3 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Contrasting Inclusions

• Westlake soils in wide drainageways (10 percent)
• Very deep, poorly drained soils on the bottom of drainageways (5 percent)

Major Uses

Cropland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• Wetness limits the production of crops in some years.
• Because of wetness in spring, this unit is susceptible to compaction if farm equipment is used.

Pastureland and Hayland

General management considerations:
• Periodic flooding and the seasonal high water table in the Latahco soil limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, the Latahco soil is susceptible to compaction and plant damage as a result of livestock trampling.

Capability Classification

3w, nonirrigated

76—Lauby-Southwick complex, 15 to 35 percent slopes

Composition

Lauby soil and similar inclusions: 45 percent
Southwick soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,700 to 3,400 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Lauby Soil

Position on landform: South- and west-facing slopes
Slope range: 15 to 35 percent
Typical profile:
0 to 17 inches—grayish brown silt loam
17 to 24 inches—brown silty clay loam
24 to 50 inches—light yellowish brown and light brown clay loam
50 to 60 inches—very pale brown loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Southwick Soil

Position on landform: North- and east-facing slopes

Slope range: 15 to 30 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Very rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Contrasting Inclusions

- Ahsahka soils on summits and shoulders (5 percent)
- Dragnot soils on convex ridges and nose slopes (5 percent)
- Larkin soils on north- and east-facing slopes (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Lauby soil (CMAI): Ponderosa pine—94 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Southwick soil (CMAI): Ponderosa pine—102 cubic feet per acre at 40 years of age
General management considerations:
- Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

6e, nonirrigated

77—Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes

Composition

Lickskillet soil and similar inclusions: 40 percent
Alpowa soil and similar inclusions: 30 percent
Rock outcrop: 15 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 800 to 2,400 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Lickskillet Soil

Position on landform: Convex, south- and west-facing slopes
Slope range: 50 to 75 percent
Typical profile:
0 to 5 inches—dark grayish brown stony silt loam
5 to 13 inches—brown very gravelly silty clay loam
13 to 16 inches—yellowish brown, calcareous extremely gravelly silty clay loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 12 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Alpowa Soil

Position on landform: Concave, south- and west-facing slopes
Slope range: 50 to 75 percent
Typical profile:
0 to 8 inches—dark grayish brown cobbly silt loam
8 to 13 inches—brown very cobbly silt loam
13 to 30 inches—brown and pale brown, calcareous very cobbly silt loam

30 to 60 inches—very pale brown, calcareous very cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Rock Outcrop

Slope range: 50 to 75 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

- Crowers soils on northeast- and northwest-facing slopes (10 percent)
- Kettenbach soils at elevations of more than 2,000 feet (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Lickskillet soil—bluebunch wheatgrass/plains pricklypear; Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass; Rock outcrop—little or no vegetation
General management considerations:
- The steepness of slope, shallow depth of the Lickskillet soil, rock fragments in the surface layer of the soils, and areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- Livestock distribution may be restricted by the areas of Rock outcrop.
- The very low available water capacity of the Lickskillet soil limits the production of forage.

Capability Classification

Lickskillet and Alpowa soils—7e, nonirrigated; Rock outcrop—not assigned

78—Limekiln very stony silt loam, 40 to 60 percent slopes

Composition

Limekiln soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: South- and west-facing slopes
Slope range: 40 to 60 percent
Elevation: 750 to 2,600 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Limekiln Soil

Typical profile:
0 to 8 inches—brown very stony silt loam
8 to 13 inches—brown, calcareous very gravelly silt loam
13 to 16 inches—very pale brown, calcareous extremely gravelly silt loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 12 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe
Sodicity: Slight

Contrasting Inclusions

- Rock outcrop (10 percent)
- Alpowa soils on north- and east-facing, concave slopes (5 percent)
- Stember soils on slopes of 20 to 50 percent (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Bluebunch wheatgrass/plains pricklypear
General management considerations:
- The steepness of slope, shallow depth, and rock fragments in the surface layer severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity limits the production of forage.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

7e, nonirrigated

79—Limekiln-Crowers association, 45 to 80 percent slopes

Composition

Limekiln soil and similar inclusions: 40 percent
Crowers soil and similar inclusions: 40 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 750 to 2,600 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Limekiln Soil

Position on landform: South- and west-facing slopes
Slope range: 45 to 60 percent
Typical profile:
0 to 8 inches—brown very stony silt loam
8 to 13 inches—brown, calcareous very gravelly silt loam
13 to 16 inches—very pale brown, calcareous extremely gravelly silt loam
16 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 12 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe
Sodicity: Slight

Characteristics of the Crowers Soil

Position on landform: North- and east-facing slopes
Slope range: 45 to 80 percent
Typical profile:
0 to 10 inches—very dark grayish brown silt loam
10 to 31 inches—brown silt loam
31 to 41 inches—brown, calcareous very cobbly silt loam
41 to 62 inches—brown, calcareous cobbly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Rock outcrop (10 percent)
- Alpowa soils on concave, south- and west-facing slopes (5 percent)
- Stember soils on south- and west-facing slopes of 20 to 50 percent (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Limekiln soil—bluebunch wheatgrass/plains pricklypear; Crowers soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- The steepness of slope, rock fragments in the surface layer of the Limekiln soil, and shallow depth of the Limekiln soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds. The steepness of slope and rock fragments may also restrict the movement of livestock.
- The very low available water capacity of the Limekiln soil limits the production of forage.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

7e, nonirrigated

80—Linville silt loam, 40 to 70 percent slopes

Composition

Linville soil and similar inclusions: 80 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Position on landform: North- and east-facing slopes
Slope range: 40 to 70 percent
Elevation: 900 to 2,800 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 150 days

Characteristics of the Linville Soil

Typical profile:
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High

Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Moist Kettenbach soils on convex, west-facing slopes (10 percent)
- Slickpoo soils on west-facing slopes (5 percent)
- Jacket soils on toeslopes (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Idaho fescue/forbs
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

81—Linville-Kettenbach association, 45 to 75 percent slopes

Composition

Linville soil and similar inclusions: 50 percent
Kettenbach soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Canyons
Elevation: 800 to 2,800 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Linville Soil

Position on landform: Plane to concave, north- and east-facing slopes
Slope range: 45 to 75 percent
Typical profile:
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Kettenbach Soil

Position on landform: Convex, dominantly north- and east-facing slopes and some northwest- and southeast-facing slopes
Slope range: 45 to 75 percent
Typical profile:
0 to 4 inches—brown stony silt loam
4 to 10 inches—dark brown gravelly silt loam
10 to 21 inches—brown very gravelly silt loam
21 to 25 inches—dark yellowish brown extremely gravelly silty clay loam
25 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Rock outcrop (5 percent)
- Moist Kettenbach soils on northwest- and southeast-facing slopes (5 percent)
- Gwin soils on ridges and convex slopes of 20 to 80 percent (3 percent)
- Keuterville soils on north- and east-facing slopes (2 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Linville soil—Idaho fescue/forbs; Kettenbach soil—bluebunch wheatgrass/arrowleaf balsamroot
General management considerations:
- The steepness of slope and rock fragments in the surface layer of the Kettenbach soil severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

82—Linville-Waha complex, 25 to 45 percent slopes

Composition

Linville soil and similar inclusions: 50 percent

Waha soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills and canyons
Elevation: 1,000 to 2,800 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Linville Soil

Position on landform: Plane to concave slopes
Slope range: 25 to 45 percent
Typical profile:
0 to 19 inches—dark grayish brown silt loam
19 to 31 inches—dark grayish brown gravelly silt loam
31 to 67 inches—brown gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Waha Soil

Position on landform: South- and west-facing, commonly convex slopes
Slope range: 25 to 45 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Slickpoo soils on south- and west-facing slopes (10 percent)
- Kettenbach soils on convex slopes of 25 to 50 percent (5 percent)

Major Uses

Rangeland, cropland

Rangeland

Natural potential plant community: Idaho fescue-bluebunch wheatgrass
General management considerations:
- The steepness of slope severely limits the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- This unit is poorly suited to cultivated crops because of the steepness of slope and the hazard of erosion.

Capability Classification

7e, nonirrigated

83—Mallory-Jacket complex, 10 to 40 percent slopes

Composition

Mallory soil and similar inclusions: 55 percent
Jacket soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills
Elevation: 3,000 to 4,300 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Mallory Soil

Position on landform: South- and west-facing slopes
Slope range: 20 to 40 percent
Typical profile:
0 to 7 inches—very dark grayish brown very stony loam
7 to 15 inches—dark brown very gravelly clay loam
15 to 25 inches—brown extremely gravelly clay
25 to 34 inches—brown extremely gravelly clay loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Jacket Soil

Position on landform: Concave, north- and east-facing slopes

Slope range: 10 to 30 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Gwin soils on south- and west-facing, convex slopes (10 percent)
- Linville soils on north- and east-facing slopes of 30 to 50 percent (5 percent)

Major Uses

Rangeland, pastureland, hayland

Rangeland

Natural potential plant community: Mallory soil—Idaho fescue/forbs; Jacket soil—common snowberry/Idaho fescue
General management considerations:
- The rock fragments in the surface layer of the Mallory soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Pastureland and Hayland

General management considerations:
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The moderate rooting depth of the Mallory soil limits the production of forage and results in droughtiness in dry years.

Capability Classification

Mallory soil—6e, nonirrigated; Jacket soil—4e, nonirrigated

84—Maloney-Zaza complex, 5 to 20 percent slopes

Composition

Maloney soil and similar inclusions: 50 percent
Zaza soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus (fig. 10)
Elevation: 4,400 to 5,350 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 75 days

Characteristics of the Maloney Soil

Position on landform: Mounds on south- and west-facing slopes in areas of patterned ground
Slope range: 5 to 20 percent
Typical profile:
0 to 5 inches—dark yellowish brown fine gravelly silt loam
5 to 25 inches—dark yellowish brown fine gravelly silt loam
25 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 22 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe

Characteristics of the Zaza Soil

Position on landform: Intermound areas on south- and west-facing slopes in areas of patterned ground
Slope range: 5 to 20 percent
Typical profile:
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Larabee soils on slopes of 15 to 40 percent (5 percent)
- Cramont soils on broad summits of hills (5 percent)
- Shilla soils on broad summits of hills (5 percent)

Major Uses

Rangeland, woodland, grazeable woodland

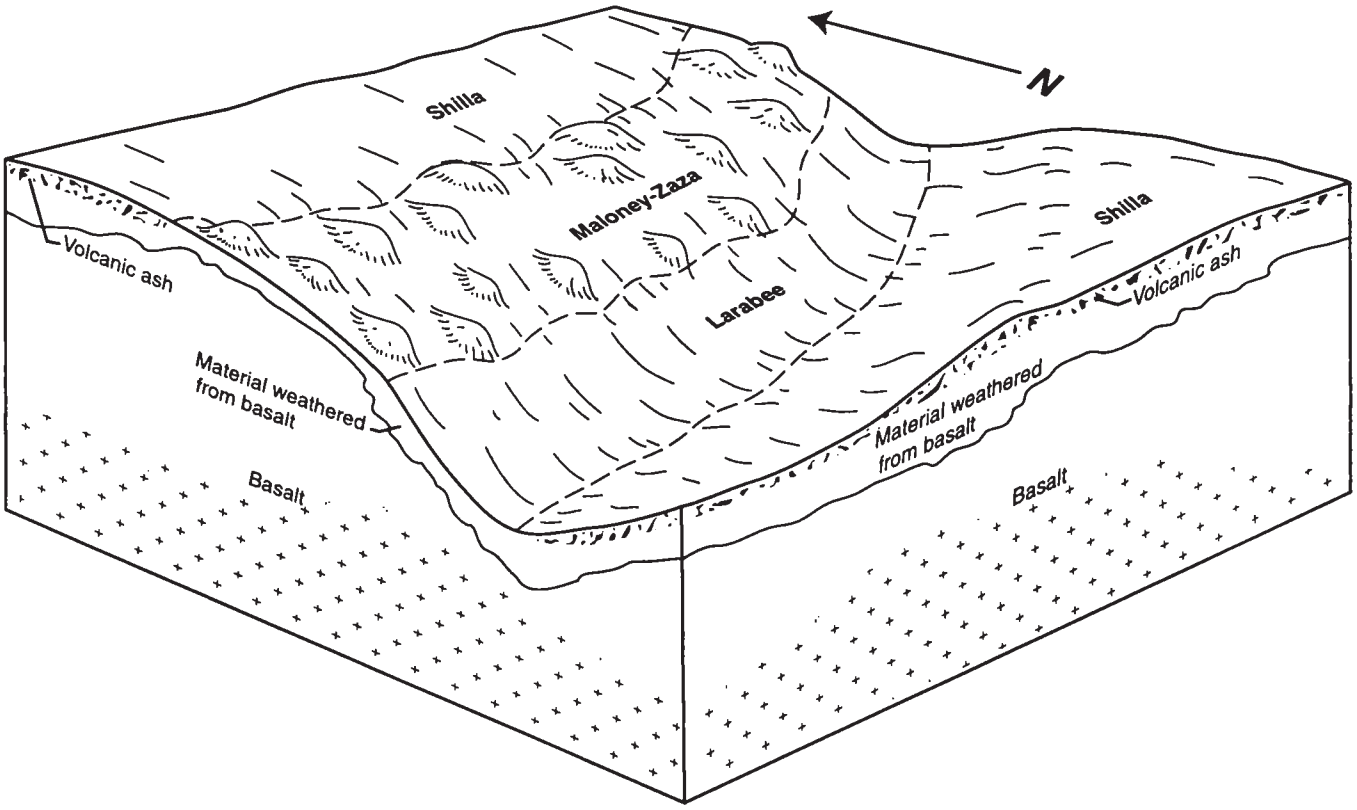


Figure 10.—Landform relationship of Maloney-Zaza complex, 5 to 20 percent slopes, with common associated soils.

Rangeland

Natural potential plant community: Zaza soil—Sandberg bluegrass/forbs

General management considerations:

- The shallow depth and content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.
- The cold temperatures of the Zaza soil limit plant growth in spring.
- The cold temperatures and the deep snowpack in most years limit the grazing season to summer and fall.

Woodland

Natural potential plant community: Maloney soil—ponderosa pine/Idaho fescue

Estimated average annual production of timber (CMAI): Ponderosa pine—44 cubic feet per acre at 55 years of age; lodgepole pine—not measured

General management considerations:

- Production of commercial timber is marginal on the Maloney soil.
- The droughtiness of the Maloney soil limits productivity and the survival of seedlings.

Grazeable Woodland

Natural potential plant community: Maloney soil—ponderosa pine/Idaho fescue

General management considerations:

- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Capability Classification

6e, nonirrigated

85—Meland-Jacket complex, 5 to 20 percent slopes

Composition

Meland soil and similar inclusions: 50 percent
Jacket soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus and canyon benches

Elevation: 2,800 to 3,000 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Meland Soil

Position on landform: Convex slopes, knobs, and shoulders
Slope range: 5 to 20 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 16 inches—brown silt loam
16 to 35 inches—pale brown gravelly silty clay loam
35 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Jacket Soil

Position on landform: Concave slopes
Slope range: 5 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 27 inches—dark grayish brown and brown silty clay loam
27 to 56 inches—brown and yellowish brown silty clay
56 to 63 inches—strong brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Gwin soils on convex slopes (10 percent)
- Mallory soils on plane to convex slopes (5 percent)

Major Uses

Cropland, pastureland, hayland, woodland, grazeable woodland, rangeland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Meland soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Pastureland and Hayland

General management considerations:
- The moderate rooting depth of the Meland soil limits the production of forage and results in droughtiness in dry years.

Woodland

Natural potential plant community: Jacket soil—ponderosa pine/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—128 cubic feet per acre at 40 years of age
General management considerations:
- This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Jacket soil—ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Rangeland

Natural potential plant community: Meland soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- This unit has few limitations for use as rangeland.

Capability Classification

Meland soil—4e, nonirrigated; Jacket soil—3e, nonirrigated

86—Meland-Keuterville complex, 10 to 35 percent slopes

Composition

Meland soil and similar inclusions: 55 percent
Keuterville soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus and canyon benches
Elevation: 1,500 to 3,700 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Meland Soil

Position on landform: Convex, south-, east-, and west-facing slopes
Slope range: 10 to 25 percent
Typical profile:
0 to 10 inches—dark grayish brown silt loam
10 to 16 inches—brown silt loam
16 to 35 inches—pale brown gravelly silty clay loam
35 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Keuterville Soil

Position on landform: North-facing slopes and steeper slopes
Slope range: 15 to 35 percent
Typical profile:
0 to 13 inches—dark brown gravelly silt loam
13 to 20 inches—brown very gravelly loam
20 to 49 inches—brown and strong brown very gravelly silty clay loam
49 to 61 inches—strong brown very cobbly silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Gwin soils on south- and west-facing slopes (5 percent)
- Kettenbach soils on south- and west-facing slopes of 20 to 45 percent (5 percent)
- Larkin soils on smooth, north-facing slopes (5 percent)

Major Uses

Cropland, pastureland, hayland, rangeland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Meland soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Pastureland and Hayland

General management considerations:
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The moderate rooting depth of the Meland soil reduces the production of forage and results in droughtiness in dry years.

Rangeland

Natural potential plant community: Meland soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- This unit has few limitations for use as rangeland.

Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—90 cubic feet per acre at 40 years of age
General management considerations:
- The high content of rock fragments in the Keuterville soil limits the available water capacity and thus limits productivity.

Grazeable Woodland

Natural potential plant community: Keuterville soil—ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

87—Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes

Composition

Mohler soil and similar inclusions: 40 percent
Nez Perce soil and similar inclusions: 30 percent
Uhlorn soil and similar inclusions: 20 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 3,200 to 3,700 feet
Average annual precipitation: About 23 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Mohler Soil

Position on landform: Plane to concave, commonly north- and east-facing slopes
Slope range: 4 to 10 percent
Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 23 inches—brown silt loam
23 to 29 inches—yellowish brown silt loam
29 to 68 inches—light yellowish brown and brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Nez Perce Soil

Position on landform: Summits, shoulders, and footslopes
Slope range: 2 to 8 percent
Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 12 to 20 inches in February through April

Characteristics of the Uhlorn Soil

Position on landform: South- and west-facing slopes
Slope range: 2 to 10 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

- Latahco soils in drainageways (5 percent)
- Vollmer soils on south- and west-facing slopes of 4 to 16 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Capability Classification

2e, nonirrigated

88—Naff silt loam, 20 to 30 percent slopes

Composition

Naff soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Position on landform: South- and west-facing slopes
Slope range: 20 to 30 percent
Elevation: 1,800 to 2,400 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Naff Soil

Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Waha soils on convex slopes of 25 to 35 percent (10 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

6e, nonirrigated

89—Naff-Palouse complex, 2 to 8 percent slopes

Composition

Naff soil and similar inclusions: 55 percent
Palouse soil and similar inclusions: 40 percent
Contrasting inclusions: 5 percent

Setting

Landform: Hills on plateaus
Elevation: 1,800 to 2,800 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil

Position on landform: Convex, south- and west-facing slopes
Slope range: 2 to 8 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Palouse Soil

Position on landform: Concave, north- and east-facing slopes
Slope range: 2 to 8 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

- Waha soils near canyon rims (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.

Capability Classification

2e, nonirrigated

90—Naff-Palouse complex, 8 to 20 percent slopes

Composition

Naff soil and similar inclusions: 50 percent
Palouse soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus (fig. 11)
Elevation: 1,800 to 2,800 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil

Position on landform: South- and west-facing slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Palouse Soil

Position on landform: Concave slopes, north- and east-facing slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Latahco soils near drainageways (5 percent)
- Waha soils on south- and west-facing slopes of 10 to 30 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils

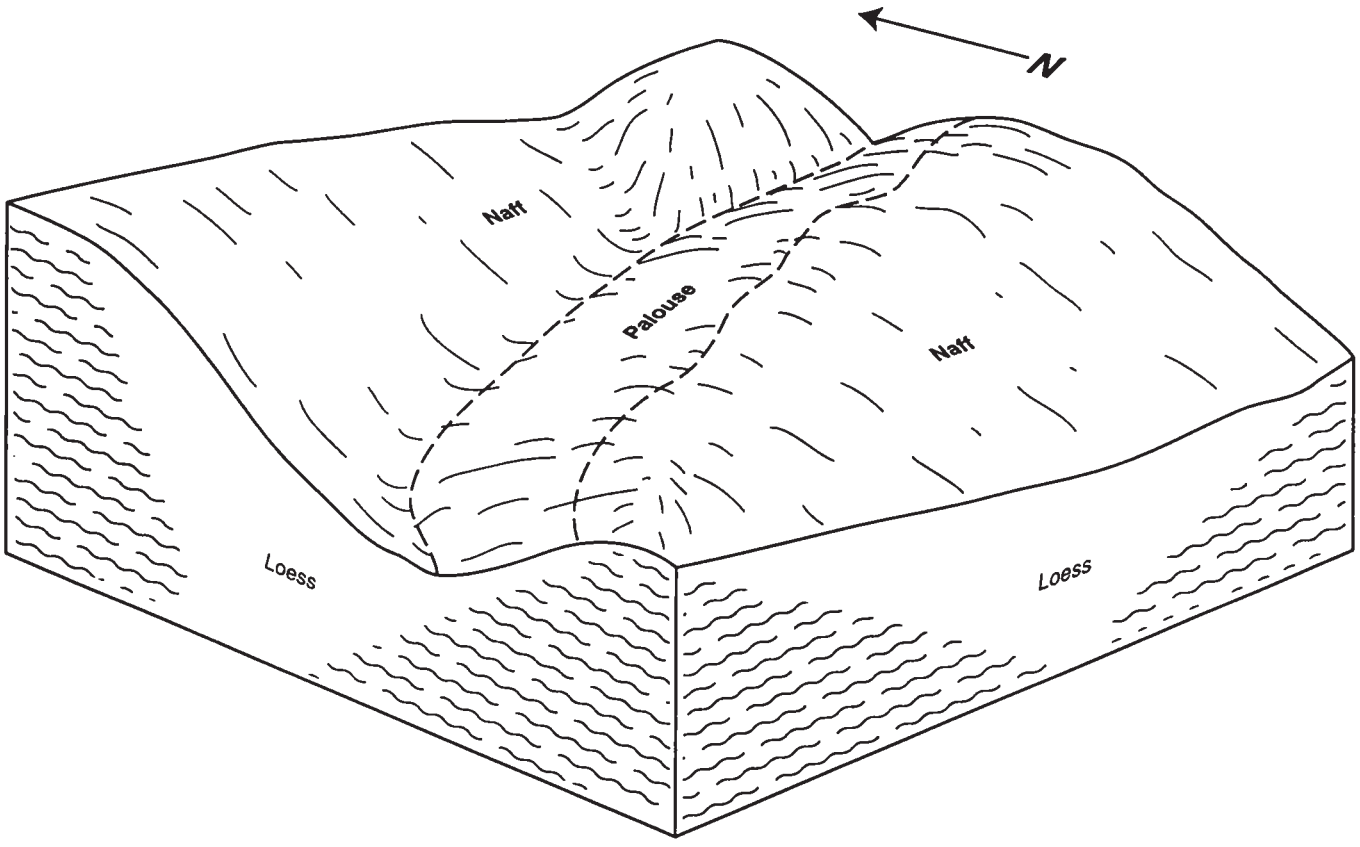


Figure 11.—Typical pattern of the soils in Naff-Palouse complex, 8 to 20 percent slopes.

General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

3e, nonirrigated

91—Naff, eroded-Palouse complex, 8 to 20 percent slopes

Composition

Naff soil, eroded, and similar inclusions: 50 percent
Palouse soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,500 to 2,800 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 135 days

Characteristics of the Naff Soil, Eroded

Position on landform: Convex slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Palouse Soil

Position on landform: Plane to concave slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

• Garfield soils on lower, convex slopes and knobs (5 percent)
• Latahco soils near drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• Past erosion has resulted in partial or complete loss of the surface layer of the Naff soil and thus has reduced the fertility and tilth of the soil.

Capability Classification

3e, nonirrigated

92—Naff-Palouse-Garfield complex, 8 to 20 percent slopes

Composition

Naff soil, eroded, and similar inclusions: 45 percent
Palouse soil and similar inclusions: 25 percent
Garfield soil and similar inclusions: 15 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,500 to 2,800 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil, Eroded

Slope range: 8 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches

Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Palouse Soil

Position on landform: Plane to concave, commonly north- and east-facing slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Garfield Soil

Position on landform: Knobs and lower, convex slopes
Slope range: 8 to 12 percent
Typical profile:
0 to 4 inches—dark grayish brown silty clay loam
4 to 23 inches—brown and yellowish brown silty clay
23 to 29 inches—yellowish brown silty clay loam
29 to 61 inches—brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Tilma soils on ridges with slopes of 4 to 15 percent (10 percent)
- Latahco soils near drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- Past erosion has resulted in partial or complete loss of the surface layer of the Naff soil and thus has reduced the fertility and tilth of the soil.

Capability Classification

3e, nonirrigated

93—Naff-Thatuna complex, 2 to 10 percent slopes

Composition

Naff soil and similar inclusions: 55 percent
Thatuna soil and similar inclusions: 35 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 2,700 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil

Slope range: 4 to 10 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Thatuna Soil

Position on landform: North- and east-facing slopes
Slope range: 2 to 6 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
Runoff: Medium
Hazard of water erosion: Moderate

Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Contrasting Inclusions

- Nez Perce soils on north-facing slopes (5 percent)
- Waha soils on convex, south- and west-facing slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.

Capability Classification

2e, nonirrigated

94—Naff-Waha complex, 3 to 12 percent slopes

Composition

Naff soil and similar inclusions: 45 percent
Waha soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,800 to 2,600 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil

Position on landform: North- and east-facing slopes
Slope range: 3 to 12 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Waha Soil

Position on landform: South- and west-facing slopes
Slope range: 3 to 12 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium
Hazard of water erosion: Severe

Contrasting Inclusions

- Kettenbach soils on convex slopes of 10 to 20 percent (5 percent)
- Slickpoo soils on south- and west-facing slopes (5 percent)
- Thatuna soils on north- and east-facing slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Capability Classification

Naff soil—2e, nonirrigated; Waha soil—4e, nonirrigated

95—Naff-Waha complex, 12 to 25 percent slopes

Composition

Naff soil and similar inclusions: 60 percent
Waha soil and similar inclusions: 25 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,200 to 2,600 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Naff Soil

Position on landform: North-, west-, and east-facing slopes
Slope range: 12 to 20 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Waha Soil

Position on landform: South- and west-facing slopes
Slope range: 12 to 25 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Gwin soils on ridges and convex, south- and west-facing slopes (5 percent)
- Kettenbach soils on south- and west-facing slopes of 20 to 30 percent (5 percent)
- Thatuna soils on concave, east-facing slopes of 10 to 15 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Capability Classification

4e, nonirrigated

96—Naff-Waha complex, 25 to 40 percent slopes

Composition

Naff soil and similar inclusions: 50 percent
Waha soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 1,800 to 2,200 feet
Average annual precipitation: About 19 inches
Frost-free season (32 degrees F): About 150 days

Characteristics of the Naff Soil

Slope range: 25 to 40 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Waha Soil

Position on landform: South- and west-facing slopes
Slope range: 25 to 40 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 29 inches—brown silty clay loam
29 to 34 inches—yellowish brown gravelly clay loam
34 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches

Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Kettenbach soils on south- and west-facing slopes of 35 to 45 percent (5 percent)
- Palouse soils on concave slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Waha soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Capability Classification

6e, nonirrigated

97—Nez Perce silty clay loam, 2 to 10 percent slopes

Composition

Nez Perce soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad summits and shoulders
Slope range: 2 to 10 percent
Elevation: 2,600 to 4,100 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Nez Perce Soil

Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 12 to 20 inches in February through April
Sodicity: Slight

Contrasting Inclusions

- Mohler soils on concave slopes (5 percent)
- Latahco soils in drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

2e, nonirrigated

98—Nez Perce silty clay loam, dry, 1 to 4 percent slopes

Composition

Nez Perce soil, dry, and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad ridges
Slope range: 1 to 4 percent
Elevation: 2,800 to 3,040 feet
Average annual precipitation: About 20 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Nez Perce Soil, Dry

Typical profile:
0 to 9 inches—dark grayish brown silty clay loam
9 to 15 inches—brown silt loam
15 to 19 inches—light brownish gray silt loam
19 to 31 inches—brown and yellowish brown silty clay
31 to 41 inches—yellowish brown, calcareous silty clay
41 to 57 inches—light yellowish brown and very pale brown, calcareous silty clay loam

57 to 67 inches—pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 12 to 20 inches in February through April
Sodicity: Slight

Contrasting Inclusions

- Broadax soils on north- and east-facing slopes of 4 to 8 percent (10 percent)
- Slickpoo soils on south- and west-facing slopes of 4 to 8 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.

Capability Classification

2s, nonirrigated

99—Nez Perce-Uhlorn complex, 8 to 15 percent slopes

Composition

Nez Perce soil and similar inclusions: 60 percent
Uhlorn soil and similar inclusions: 25 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,800 to 3,850 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Nez Perce Soil

Position on landform: Convex shoulders and nose slopes
Slope range: 8 to 15 percent
Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Rapid
Hazard of water erosion: Severe
Depth to seasonal high water table (perched): 12 to 20 inches in February through April
Sodicity: Slight

Characteristics of the Uhlorn Soil

Position on landform: Plane to concave slopes
Slope range: 8 to 15 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Severe

Contrasting Inclusions

- Vollmer soils on shoulders (10 percent)
- Deep or very deep soils that have a very cobbly silty clay subsoil and are on south- and west-facing, convex slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The abrupt silty clay subsoil of the Nez Perce soil

restricts the growth of deep-rooted crops and results in droughtiness in dry years.
• The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

Capability Classification

3e, nonirrigated

100—Oliphant silt loam, 1 to 4 percent slopes

Composition

Oliphant soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad ridges
Slope range: 1 to 4 percent
Elevation: 1,350 to 1,700 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Oliphant Soil

Typical profile:
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight

Contrasting Inclusions

• Endicott soils on south- and west-facing slopes of 3 to 8 percent (5 percent)
• Hatwai soils that occur as small, circular slick spots (5 percent)

Major Uses

Cropland, building site development (fig. 12)

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation.

Building Site Development

General management considerations:
• Excavation can expose soil material that is highly susceptible to erosion by water and wind.

Capability Classification

3c, nonirrigated

101—Oliphant silt loam, 8 to 20 percent slopes

Composition

Oliphant soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Commonly on north- and east-facing slopes
Slope range: 8 to 20 percent
Elevation: 1,200 to 2,100 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Oliphant Soil

Typical profile:
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

• Hatwai soils that occur as circular slick spots (5 percent)
• Oliphant soils that have a gravelly substratum and are on convex slopes of 15 to 25 percent (5 percent)
• Stember soils on convex slopes of 4 to 15 percent (5 percent)

Major Uses

Cropland, rangeland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas

Figure 12.—An excavated area of Oliphant silt loam, 1 to 4 percent slopes. The topsoil is dark colored, and the alkaline subsoil material is light colored. The subsoil material is poorly suited to landscaping plants.

General management considerations:
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Idaho fescue-bluebunch wheatgrass
General management considerations:
- This unit has few limitations for use as rangeland.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The steepness of slope limits the use of construction equipment.

Capability Classification

3e, nonirrigated

102—Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes

Composition

Oliphant soil, gravelly substratum, and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Footslopes
Slope range: 2 to 6 percent
Elevation: 1,300 to 1,600 feet
Average annual precipitation: About 15 inches
Frost-free season (32 degrees F): About 165 days

Characteristics of the Oliphant Soil, Gravelly Substratum

Typical profile:
0 to 8 inches—dark grayish brown silt loam
8 to 26 inches—brown silt loam

26 to 36 inches—yellowish brown silt loam
36 to 41 inches—pale brown, calcareous gravelly silt loam
41 to 62 inches—very pale brown, calcareous very gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Moderate

Contrasting Inclusions

- Hatwai soils that occur as small, circular slick spots (5 percent)
- Alpowa soils (5 percent)
- Soils that are moderately deep to a duripan underlain by sand and gravel (3 percent)
- Tammany soils (2 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- In most years, annual cropping is not practical because of the low precipitation.
- The hazard of erosion is a concern.

Capability Classification

3e, nonirrigated

103—Oliphant-Alpowa complex, 20 to 40 percent slopes

Composition

Oliphant soil and similar inclusions: 65 percent
Alpowa soil and similar inclusions: 20 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,400 to 1,900 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Oliphant Soil

Position on landform: North- and east-facing slopes
Slope range: 20 to 40 percent
Typical profile:
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Alpowa Soil

Position on landform: South- and west-facing slopes
Slope range: 20 to 40 percent
Typical profile:
0 to 12 inches—grayish brown cobbly silt loam
12 to 35 inches—pale brown, calcareous very cobbly silt loam
35 to 60 inches—white, calcareous very cobbly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Stember soils on south- and west-facing, convex slopes (10 percent)
- Soils that have a light-colored, eroded surface layer and are on convex slopes (3 percent)
- Endicott soils on summits and shoulders (2 percent)

Major Uses

Cropland, rangeland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Oliphant soil—Idaho fescue-bluebunch wheatgrass;

Alpowa soil—bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
• This unit has few limitations for use as rangeland.

Capability Classification

6e, nonirrigated

104—Oliphant-Hatwai complex, 1 to 8 percent slopes

Composition

Oliphant soil and similar inclusions: 65 percent
Hatwai soil and similar inclusions: 25 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 1,700 to 1,760 feet
Average annual precipitation: About 15 inches
Frost-free season (32 degrees F): About 165 days

Characteristics of the Oliphant Soil

Slope range: 1 to 8 percent
Typical profile:
0 to 16 inches—dark grayish brown and brown silt loam
16 to 29 inches—brown silt loam
29 to 62 inches—pale brown and very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Hatwai Soil

Description of areas: Small, circular slick spots
Slope range: 1 to 8 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 21 inches—brown silt loam
21 to 26 inches—brown silt loam
26 to 36 inches—brown, calcareous silt loam
36 to 66 inches—brown and yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense subsoil at a depth of 15 to 21 inches
Runoff: Slow
Hazard of water erosion: Severe
Sodicity: Moderate or strong

Contrasting Inclusions

• Tammany soils on hills on plateaus (10 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• In most years, annual cropping is not practical because of the low precipitation.
• The hazard of erosion is a concern.
• The sodicity of the Hatwai soil creates special management concerns such as limited availability of nutrients, restricted infiltration rate, and poor structure of the surface layer.
• The sodicity of the subsoil of the Hatwai soil causes some nutrients to become unavailable to plants.

Capability Classification

Oliphant soil—3e, nonirrigated; Hatwai soil—4e, nonirrigated

105—Oliphant-Stember complex, 8 to 20 percent slopes

Composition

Oliphant soil and similar inclusions: 50 percent
Stember soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,400 to 2,600 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Oliphant Soil

Position on landform: Backslopes and toeslopes
Slope range: 8 to 20 percent
Typical profile:
0 to 8 inches—dark grayish brown silt loam
8 to 26 inches—brown silt loam
26 to 36 inches—yellowish brown silt loam

36 to 41 inches—pale brown, calcareous gravelly silt loam
41 to 62 inches—very pale brown, calcareous very gravelly silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Medium
Hazard of water erosion: Severe

Characteristics of the Stember Soil

Position on landform: Upper backslopes and shoulders
Slope range: 8 to 15 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 13 inches—brown, calcareous very gravelly silt loam
13 to 18 inches—pale brown, calcareous very gravelly loam
18 to 30 inches—white, calcareous extremely cobbly loam
30 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: 20 to 35 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Endicott soils near the summits of hills (5 percent)
- Limekiln soils on south- and west-facing slopes (5 percent)
- Alpowa soils on hills (5 percent)

Major Uses

Cropland, rangeland, building site development

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- In most years, annual cropping is not practical because of the low precipitation.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth and the high content of rock fragments in the subsoil of the Stember soil restrict the growth of deep-rooted crops and result in droughtiness in dry years.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
- This unit has few limitations for use as rangeland.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.

Capability Classification

4e, nonirrigated

106—Palouse-Athena complex, 2 to 8 percent slopes

Composition

Palouse soil and similar inclusions: 60 percent
Athena soil and similar inclusions: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,400 to 2,900 feet
Average annual precipitation: About 19 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Palouse Soil

Position on landform: Plane to concave slopes of broad ridges
Slope range: 2 to 8 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Athena Soil

Position on landform: Convex, south- and west-facing slopes of broad ridges

Slope range: 2 to 8 percent
Typical profile:
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

- Naff soils (10 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.

Capability Classification

2e, nonirrigated

107—Palouse-Athena complex, 8 to 20 percent slopes

Composition

Palouse soil and similar inclusions: 60 percent
Athena soil and similar inclusions: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,400 to 2,800 feet
Average annual precipitation: About 19 inches
Frost-free season (32 degrees F): About 145 days

Characteristics of the Palouse Soil

Position on landform: Concave slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 15 inches—dark grayish brown and dark brown silt loam
15 to 27 inches—brown silt loam
27 to 50 inches—yellowish brown silt loam
50 to 63 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Athena Soil

Position on landform: Plane to concave slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 14 inches—dark grayish brown silt loam
14 to 21 inches—brown silt loam
21 to 44 inches—yellowish brown and light yellowish brown silt loam
44 to 64 inches—very pale brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Naff soils on convex slopes (5 percent)
- Thatuna soils on footslopes (3 percent)
- Latahco soils near drainageways (2 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

3e, nonirrigated

108—Pits, gravel

Landform: Alluvial terraces
Description of areas: Open excavations from which sand and gravel are removed
Capability classification: Not assigned

109—Redmore silt loam, 1 to 6 percent slopes

Composition

Redmore soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad summits
Slope range: 1 to 6 percent
Elevation: 2,450 to 2,800 feet
Average annual precipitation: About 17 inches
Frost-free season (32 degrees F): About 135 days

Characteristics of the Redmore Soil

Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 16 inches—very dark grayish brown silty clay
16 to 19 inches—brown silty clay loam
19 to 35 inches—yellowish brown, calcareous silty clay loam
35 to 42 inches—white, calcareous silt loam
42 to 46 inches—white, calcareous very gravelly loam
46 to 60 inches—white, indurated duripan
Depth class: Deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 8 to 16 inches
Runoff: Slow
Hazard of water erosion: Moderate
Sodicity: Moderate

Contrasting Inclusions

- Broadax soils (5 percent)
- Slickpoo soils on south- and west-facing slopes of 4 to 8 percent (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- The hazard of erosion is a concern.
- The sodicity of the subsoil restricts the infiltration rate and degrades the structure of the surface layer.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Capability Classification

4e, nonirrigated

110—Riverwash-Aquents complex, nearly level

Composition

Riverwash: 50 percent
Aquents and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Flood plains
Elevation: 740 to 1,200 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 165 days

Characteristics of the Riverwash

Position on landform: Gravel bars, riverbanks, and islands
Slope range: 0 to 4 percent
Kind of material: Loose sand, gravel, and cobbles

Characteristics of the Aquents

Slope range: 0 to 3 percent
Representative profile:
0 to 2 inches—brown very cobbly very fine sandy loam
2 to 8 inches—light brownish gray extremely cobbly loamy sand
8 to 25 inches—brown, mottled extremely cobbly sand
25 to 60 inches—yellowish brown, mottled extremely cobbly loamy sand
Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid or very rapid
Available water capacity: Very low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 6 to 24 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 6 to 24 inches in November through July

Frequency of flooding: Frequent in December through June

Contrasting Inclusions

- Wistona soils on higher terraces and islands (5 percent)
- Bridgewater soils on terraces (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Riverwash—little or no vegetation; Aquents—mixed bottomland trees and shrubs
General management considerations:
- Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.
- Flooding of the Aquents in spring may prevent access by livestock.

Capability Classification

Riverwash—not assigned; Aquents—7w, nonirrigated

111—Rock outcrop-Flybow complex, very steep

Composition

Rock outcrop: 45 percent
Flybow soil and similar inclusions: 35 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 1,000 to 2,000 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Rock Outcrop

Slope range: 80 to 120 percent
Kind of rock: Exposed basalt, commonly occurring as cliffs

Characteristics of the Flybow Soil

Position on landform: Gorges
Slope range: 80 to 100 percent
Typical profile:
0 to 2 inches—dark brown very gravelly silt loam
2 to 4 inches—brown very gravelly silt loam
4 inches—basalt
Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 4 to 10 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Chard soils on benches and terraces with slopes of 4 to 25 percent (10 percent)
- Aquents along riverbanks (5 percent)
- Kettenbach soils on concave slopes of 50 to 90 percent (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Rock outcrop—little or no vegetation; Flybow soil—Sandberg bluegrass/forbs
General management considerations:
- Because of the steepness of slope and the areas of Rock outcrop, this unit is very poorly suited to livestock grazing.

Capability Classification

Rock outcrop—not assigned; Flybow soil—8s, nonirrigated

112—Seddow silt loam, 10 to 40 percent slopes

Composition

Seddow soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on high plateaus
Position on landform: South- and west-facing slopes
Slope range: 10 to 40 percent
Elevation: 4,200 to 4,800 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 65 days

Characteristics of the Seddow Soil

Typical profile:
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam

21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Cramont soils on shoulders and ridges with slopes of 5 to 15 percent (5 percent)
- Shilla soils on concave slopes (5 percent)
- Larabee soils on convex slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
- The restricted rooting depth and high content of coarse fragments limit the amount of water available for tree growth and thus limit productivity.
- Reforestation may be limited because of droughtiness.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Capability Classification

6e, nonirrigated

113—Setters silt loam, 2 to 8 percent slopes

Composition

Setters soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Slope range: 2 to 8 percent
Elevation: 3,400 to 4,300 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Setters Soil

Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Silty clay subsoil at a depth of 18 to 24 inches
Runoff: Slow
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 14 to 22 inches in February through April

Contrasting Inclusions

- Taney soils on slopes of 4 to 12 percent (10 percent)
- Larabee soils commonly near rims of canyons (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland, hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The short growing season limits the production of some crops.
- The hazard of erosion is a concern.
- The silty clay subsoil restricts the growth of deep-rooted crops.

• Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.

Woodland

Natural potential plant community: Douglas fir/ common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
General management considerations:
• Because of the silty clay subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Douglas fir/ common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
• The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.

Capability Classification

3e, nonirrigated

114—Shilla silt loam, 2 to 12 percent slopes

Composition

Shilla soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on high plateaus
Position on landform: Broad ridges
Slope range: 2 to 12 percent
Elevation: 4,400 to 5,300 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 65 days

Characteristics of the Shilla Soil

Typical profile:
1 inch to 0—organic mat
0 to 1 inch—dark grayish brown silt loam
1 inch to 16 inches—light yellowish brown silt loam
16 to 24 inches—yellowish brown loam
24 to 31 inches—light yellowish brown very gravelly clay loam
31 to 53 inches—yellowish brown extremely cobbly clay loam
53 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Slow
Hazard of water erosion: Slight or moderate

Contrasting Inclusions

• Larabee soils on south- and west-facing slopes of 8 to 20 percent on shoulders (5 percent)
• Seddow soils (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—93 cubic feet per acre at 114 years of age; western larch—not measured; Engelmann spruce—98 cubic feet per acre at 90 years of age; lodgepole pine—not measured
General management considerations:
• Because the volcanic ash surface layer is fragile, excessive disturbance or compaction reduces productivity and seedling survival.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
• The volcanic ash surface layer is susceptible to compaction during wet periods.

Capability Classification

4e, nonirrigated

115—Shilla-Seddow complex, 5 to 30 percent slopes

Composition

Shilla soil and similar inclusions: 60 percent
Seddow soil and similar inclusions: 20 percent
Contrasting inclusions: 20 percent

Setting

Landform: Hills on high plateaus
Elevation: 4,400 to 5,300 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 65 days

Characteristics of the Shilla Soil

Slope range: 5 to 30 percent
Typical profile:
1 inch to 0—organic mat
0 to 1 inch—dark grayish brown silt loam
1 inch to 16 inches—light yellowish brown silt loam
16 to 24 inches—yellowish brown loam
24 to 31 inches—light yellowish brown very gravelly clay loam
31 to 53 inches—yellowish brown extremely cobbly clay loam
53 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Seddow Soil

Position on landform: South- and west-facing slopes
Slope range: 5 to 30 percent
Typical profile:
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Culdesac soils on north- and east-facing slopes and on footslopes (10 percent)
- Larabee soils on convex, south- and west-facing slopes (5 percent)
- Maloney soils on mounds in areas of patterned ground (3 percent)
- Zaza soils in areas of patterned ground (2 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber on the Shilla soil (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—93 cubic feet per acre at 114 years of age; western larch—not measured; Engelmann spruce—98 cubic feet per acre at 90 years of age; lodgepole pine—not measured
Estimated average annual production of timber on the Seddow soil (CMAI): Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
- Because the volcanic ash surface layer is fragile, excessive disturbance or compaction reduces productivity and seedling survival.
- Erosion is a concern on the Seddow soil. Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

• The volcanic ash surface layer of the Shilla soil is susceptible to compaction during wet periods.

Capability Classification

4e, nonirrigated

116—Slickpoo silt loam, 5 to 15 percent slopes

Composition

Slickpoo soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: South- and west-facing slopes
Slope range: 5 to 15 percent
Elevation: 1,600 to 2,900 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Slickpoo Soil

Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 17 inches—brown silt loam
17 to 22 inches—yellowish brown silty clay loam
22 to 37 inches—yellowish brown cobbly silty clay loam
37 to 45 inches—light gray, calcareous very cobbly silt loam
45 inches—basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Medium
Hazard of water erosion: Severe

Contrasting Inclusions

• Broadax soils on plane to concave, commonly northwest- and southeast-facing slopes (5 percent)
• Kettenbach soils on slopes of 10 to 25 percent (5 percent)
• Linville soils on north- and east-facing slopes (5 percent)

Major Uses

Cropland, rangeland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Idaho fescue-bluebunch wheatgrass
General management considerations:
• This unit has few limitations for use as rangeland.

Capability Classification

3e, nonirrigated

117—Slickpoo-Broadax complex, 15 to 25 percent slopes

Composition

Slickpoo soil and similar inclusions: 45 percent
Broadax soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 1,600 to 2,900 feet
Average annual precipitation: About 16 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Slickpoo Soil

Position on landform: South- and west-facing slopes
Slope range: 15 to 25 percent
Typical profile:
0 to 12 inches—dark grayish brown silt loam
12 to 17 inches—brown silt loam
17 to 22 inches—yellowish brown silty clay loam
22 to 37 inches—yellowish brown cobbly silty clay loam
37 to 45 inches—light gray, calcareous very cobbly silt loam
45 inches—basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Broadax Soil

Position on landform: North- and east-facing slopes
Slope range: 15 to 25 percent
Typical profile:
0 to 16 inches—dark grayish brown silt loam
16 to 33 inches—brown and light yellowish brown silt loam

33 to 37 inches—pale brown silt loam
37 to 65 inches—light yellowish brown, calcareous silt loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe
Sodicity: Slight

Contrasting Inclusions

- Hatwai soils that occur as circular slick spots on south- and west-facing slopes of 10 to 25 percent (5 percent)
- Kettenbach soils on south- and west-facing slopes (5 percent)
- Linville soils on south- and west-facing slopes of 20 to 30 percent (5 percent)

Major Uses

Cropland, rangeland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The sodicity of the subsoil of the Broadax soil causes some nutrients to become unavailable to plants.

Rangeland

Natural potential plant community: Idaho fescue-bluebunch wheatgrass
General management considerations:
- This unit has few limitations for use as rangeland.

Capability Classification

4e, nonirrigated

118—Southwick silt loam, 3 to 12 percent slopes

Composition

Southwick soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad ridges
Slope range: 3 to 12 percent
Elevation: 2,400 to 3,200 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Southwick Soil

Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown, mottled light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Medium
Hazard of water erosion: Slight or moderate
Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Contrasting Inclusions

- Driscoll soils on convex slopes (5 percent)
- Larkin soils on south- and west-facing slopes (5 percent)
- Bluesprin soils on convex, south- and west-facing slopes of 10 to 20 percent (3 percent)
- Latahco soils near drainageways (2 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The dense silty clay loam subsoil restricts growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—112 cubic feet per acre at 40 years of age
General management considerations:
- Because of the dense subsoil and the seasonal perched water table, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

119—Southwick-Bluesprin complex, 10 to 35 percent slopes

Composition

Southwick soil and similar inclusions: 50 percent
Bluesprin soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,400 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Southwick Soil

Position on landform: Plane to concave slopes
Slope range: 10 to 25 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Characteristics of the Bluesprin Soil

Position on landform: South-, west-, and east-facing, convex slopes
Slope range: 10 to 35 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 14 inches—grayish brown silt loam
14 to 22 inches—brown and yellowish brown very gravelly silty clay loam
22 to 28 inches—yellowish brown extremely gravelly clay loam
28 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Kettenbach soils on convex, south- and west-facing slopes (10 percent)
• Driscoll soils on north- and east-facing, convex slopes (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
• The moderate rooting depth and high content of rock fragments in the subsoil of the Bluesprin soil restrict the growth of deep-rooted crops and result in droughtiness in dry years.

Woodland

Natural potential plant community: Southwick soil—ponderosa pine/common snowberry
Estimated average annual production of timber on the Southwick soil (CMAI): Ponderosa pine—112 cubic feet per acre at 40 years of age
General management considerations:
• Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Southwick soil—ponderosa pine/common snowberry
General management considerations:
• This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

120—Southwick-Driscoll complex, 3 to 12 percent slopes

Composition

Southwick soil and similar inclusions: 55 percent
Driscoll soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,400 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Southwick Soil

Position on landform: Plane to concave backslopes and footslopes
Slope range: 3 to 12 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and mottled light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Medium
Hazard of water erosion: Slight or moderate
Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Characteristics of the Driscoll Soil

Position on landform: Summits, shoulders, and footslopes
Slope range: 3 to 12 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 15 to 30 inches in January through April

Contrasting Inclusions

- Larkin soils on north- and east-facing, plane to concave slopes (5 percent)
- Bluesprin soils on slopes of 8 to 25 percent (5 percent)
- Keuterville soils on slopes of 12 to 30 percent (3 percent)
- Wilkins soils near drainageways (2 percent)

Major Uses

Cropland (fig. 13), woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Southwick soil (CMAI): Ponderosa pine—112 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Driscoll soil (CMAI): Ponderosa pine—132 cubic feet per acre at 40 years of age
General management considerations:
- Because of the dense silty clay loam subsoil of the Southwick soil and the abrupt silty clay subsoil of the Driscoll soil, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry

Figure 13.—A rolling field in an area of Southwick-Driscoll complex, 3 to 12 percent slopes.

General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

121—Southwick-Driscoll complex, 12 to 25 percent slopes

Composition

Southwick soil and similar inclusions: 50 percent
Driscoll soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,400 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Southwick Soil

Position on landform: Plane to concave slopes
Slope range: 12 to 25 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Characteristics of the Driscoll Soil

Position on landform: Shoulders and footslopes
Slope range: 12 to 25 percent
Typical profile:
0 to 13 inches—dark grayish brown silt loam
13 to 27 inches—brown silt loam
27 to 31 inches—light gray, mottled silt loam
31 to 46 inches—pale brown, light brown, and light yellowish brown silty clay
46 to 60 inches—light yellowish brown and brownish yellow silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 15 to 30 inches in January through April

Contrasting Inclusions

- Larkin soils on north- and east-facing slopes of 20 to 25 percent (5 percent)
- Bluesprin soils on convex slopes of 12 to 30 percent (5 percent)
- Wilkins soils near drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.
- The abrupt silty clay subsoil of the Driscoll soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Southwick soil (CMAI): Ponderosa pine—112 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Driscoll soil (CMAI): Ponderosa pine—132 cubic feet per acre at 40 years of age
General management considerations:
- Because of the dense silty clay loam subsoil of the Southwick soil and the abrupt silty clay subsoil of the Driscoll soil, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

122—Southwick-Larkin complex, 12 to 25 percent slopes

Composition

Southwick soil and similar inclusions: 45 percent
Larkin soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,400 to 3,400 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 125 days

Characteristics of the Southwick Soil

Position on landform: North- and east-facing, commonly concave slopes
Slope range: 12 to 20 percent
Typical profile:
0 to 9 inches—dark grayish brown silt loam
9 to 26 inches—brown silt loam
26 to 32 inches—pale brown and light gray silt loam
32 to 46 inches—pale brown silty clay loam
46 to 64 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part, very slow in the lower part
Available water capacity: High
Potential rooting depth: More than 60 inches

Restriction to rooting depth: Dense silty clay loam subsoil at a depth of 29 to 36 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe
Depth to seasonal high water table (perched): 20 to 36 inches in February through April

Characteristics of the Larkin Soil

Position on landform: South- and west-facing, commonly convex slopes
Slope range: 12 to 25 percent
Typical profile:
0 to 15 inches—dark grayish brown silt loam
15 to 19 inches—yellowish brown silt loam
19 to 61 inches—brown and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Driscoll soils on convex slopes of 4 to 15 percent (10 percent)
- Latahco soils near drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The dense silty clay loam subsoil of the Southwick soil restricts growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Ponderosa pine/common snowberry
Estimated average annual production of timber on the Southwick soil (CMAI): Ponderosa pine—112 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Larkin soil (CMAI): Ponderosa pine—85 cubic feet per acre at 40 years of age
General management considerations:
- Because of the dense subsoil and the seasonal perched water table, trees on the Southwick soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Ponderosa pine/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Capability Classification

4e, nonirrigated

123—Sweiting-Joel complex, 4 to 20 percent slopes

Composition

Sweiting soil and similar inclusions: 65 percent
Joel soil and similar inclusions: 25 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 4,000 to 4,500 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 90 days

Characteristics of the Sweiting Soil

Position on landform: South- and west-facing slopes
Slope range: 4 to 20 percent
Typical profile:
0 to 8 inches—dark grayish brown silt loam
8 to 12 inches—brown silt loam
12 to 23 inches—brown silty clay loam
23 to 31 inches—light yellowish brown very gravelly clay
31 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Joel Soil

Position on landform: North- and east-facing slopes
Slope range: 4 to 20 percent
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
Depth class: Very deep

Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Boles soils on summits and toeslopes of 1 to 8 percent (5 percent)
- Larabee soils on south- and west-facing slopes of 15 to 30 percent (5 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

Woodland

Natural potential plant community: Sweiting soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
Estimated average annual production of timber on the Sweiting soil (CMAI): Ponderosa pine—74 cubic feet per acre at 40 years of age
Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—122 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
- The droughtiness of the Sweiting soil and the dry, south- and west-facing slopes limit productivity and the survival of seedlings.
- Because of the moderate rooting depth, trees on the Sweiting soil are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Sweiting soil—ponderosa pine/common snowberry; Joel soil—Douglas fir/mallow ninebark
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Sweiting soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The moderate rooting depth of the Sweiting soil limits the production of forage and results in droughtiness in dry years.

Capability Classification

Sweiting soil—4e, nonirrigated; Joel soil—3e, nonirrigated

124—Talmaks silt loam, 2 to 8 percent slopes

Composition

Talmaks soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad ridgetops
Slope range: 2 to 8 percent
Elevation: 4,200 to 4,750 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 70 days

Characteristics of the Talmaks Soil

Typical profile:
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

- Seddow soils on south- and west-facing slopes of 4 to 12 percent (5 percent)
- Carlinton soils that are on summits and have slopes of 1 to 4 percent (3 percent)
- Setters soils (2 percent)

Major Uses

Woodland, grazeable woodland, pastureland and hayland, cropland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
• This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower (fig. 14)
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Pastureland and Hayland

General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• The short growing season limits the production of some crops.
• The hazard of erosion is a concern.

Capability Classification

4e, nonirrigated

125—Talmaks silt loam, 8 to 20 percent slopes

Composition

Talmaks soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Slope range: 8 to 20 percent
Elevation: 4,200 to 4,750 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 70 days

Characteristics of the Talmaks Soil

Typical profile:
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam
16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

• Seddow soils on convex, west-facing slopes (10 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber (CMAI): Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
• This unit has few limitations for use as woodland.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
• The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
• The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• The short growing season limits the production of some crops.
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Figure 14.—Characteristic native forest understory in an area of Talmaks silt loam, 2 to 8 percent slopes.

Pastureland and Hayland

General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.

Capability Classification

4e, nonirrigated

126—Talmaks-Seddow complex, 8 to 20 percent slopes

Composition

Talmaks soil and similar inclusions: 45 percent
Seddow soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 4,200 to 4,750 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 70 days

Characteristics of the Talmaks Soil

Position on landform: North- and east-facing slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 3 inches—brown silt loam
3 to 16 inches—yellowish brown silt loam

16 to 47 inches—light yellowish brown silty clay loam and silt loam
47 to 70 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Seddow Soil

Position on landform: South- and west-facing slopes
Slope range: 8 to 20 percent
Typical profile:
1 inch to 0—organic mat
0 to 4 inches—brown silt loam
4 to 13 inches—yellowish brown and light yellowish brown silt loam
13 to 21 inches—light yellowish brown silty clay loam
21 to 29 inches—dark yellowish brown gravelly clay loam
29 to 48 inches—dark yellowish brown extremely cobbly clay loam
48 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 55 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Larabee soils on convex, south- and west-facing slopes (10 percent)
- Culdesac soils on concave, north- and east-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/longtube twinflower
Estimated average annual production of timber on the Talmaks soil (CMAI): Ponderosa pine—106 cubic feet per acre at 40 years of age; Douglas fir—77 cubic feet per acre at 98 years of age; grand fir—122 cubic feet per acre at 103 years of age; western larch—not measured; lodgepole pine—not measured
Estimated average annual production of timber on the Seddow soil (CMAI): Ponderosa pine—77 cubic feet per acre at 40 years of age; Douglas fir—51 cubic feet per acre at 107 years of age; grand fir—83 cubic feet per acre at 117 years of age; western larch—not measured; lodgepole pine—not measured
General management considerations:
- The restricted rooting depth and high content of coarse fragments in the Seddow soil limit the amount of water available for tree growth and thus limit productivity.
- Reforestation of the Seddow soil may be limited because of droughtiness.

Grazeable Woodland

Natural potential plant community: Grand fir/longtube twinflower
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.

Capability Classification

4e, nonirrigated

127—Tammany-Chard-Rock outcrop complex, 35 to 65 percent slopes

Composition

Tammany soil and similar inclusions: 40 percent
Chard soil and similar inclusions: 30 percent
Rock outcrop: 15 percent
Contrasting inclusions: 15 percent

Setting

Landform: Dissected alluvial terraces
Elevation: 750 to 1,200 feet
Average annual precipitation: About 14 inches
Frost-free season (32 degrees F): About 180 days

Characteristics of the Tammany Soil

Slope range: 35 to 65 percent
Typical profile:
0 to 4 inches—brown silt loam
4 to 17 inches—brown and yellowish brown very gravelly loam
17 to 29 inches—pale brown, calcareous extremely gravelly coarse sandy loam

29 to 60 inches—light gray, calcareous extremely gravelly coarse sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, very rapid in the substratum
Available water capacity: Low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Sand and gravel at a depth of 25 to 40 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Chard Soil

Slope range: 35 to 65 percent
Typical profile:
0 to 15 inches—brown silt loam
15 to 32 inches—brown loam
32 to 39 inches—pale brown, calcareous loam
39 to 46 inches—light brownish gray, calcareous fine sandy loam
46 to 55 inches—light gray, calcareous loam
55 to 62 inches—gray, calcareous sand
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part, rapid in the substratum
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe
Sodicity: Moderate

Characteristics of the Rock Outcrop

Position on landform: Sharply convex slopes
Slope range: 35 to 65 percent
Kind of rock: Exposed basalt

Contrasting Inclusions

- Moderately deep, loamy soils on convex slopes (10 percent)
- Limekiln soils near areas of Rock outcrop (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Tammany and Chard soils—bluebunch wheatgrass-Sandberg bluegrass; Rock outcrop—little or no vegetation
General management considerations:
- The steepness of slope and areas of Rock outcrop severely limit the construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.
- Livestock distribution may be severely limited by the areas of Rock outcrop.
- The sodicity of the subsoil of the Chard soil causes some nutrients to become unavailable to plants.

Capability Classification

Tammany and Chard soils—7e, nonirrigated; Rock outcrop—not assigned

128—Taney silt loam, 3 to 10 percent slopes

Composition

Taney soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus and canyon benches
Position on landform: Broad ridges
Slope range: 3 to 10 percent
Elevation: 2,600 to 3,500 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Taney Soil

Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan, very slow through the fragipan
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Contrasting Inclusions

- Joel soils on convex, south-facing slopes (5 percent)

- Setters soils on summits and low-lying knobs (5 percent)
- Wilkins soils near drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The seasonal perched water table and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Douglas fir/common snowberry
Estimated average annual production of timber (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
General management considerations:
- Because of the fragipan and the seasonal perched water table, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Douglas fir/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

129—Taney-Joel complex, 10 to 20 percent slopes

Composition

Taney soil and similar inclusions: 50 percent
Joel soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,600 to 3,500 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Taney Soil

Position on landform: North- and east-facing, commonly concave slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan, very slow through the fragipan
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Characteristics of the Joel Soil

Position on landform: South- and west-facing, commonly convex slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam
24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Moderate or severe

Contrasting Inclusions

- Setters soils that are on knobs and summits and have slopes of 5 to 15 percent (10 percent)
- Wilkins soils near drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils

General management considerations:

- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark

Estimated average annual production of timber on the Taney soil (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age

Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age

General management considerations:

- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark

General management considerations:

- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:

- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

130—Taney-Joel complex, 20 to 40 percent slopes

Composition

Taney soil and similar inclusions: 50 percent
Joel soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 3,800 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Taney Soil

Position on landform: North- and east-facing slopes
Slope range: 20 to 30 percent
Typical profile:

0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam

Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan, very slow through the fragipan
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Characteristics of the Joel Soil

Position on landform: South- and west-facing slopes
Slope range: 20 to 40 percent
Typical profile:

0 to 5 inches—dark grayish brown silt loam
5 to 18 inches—brown and yellowish brown silt loam
18 to 24 inches—yellowish brown silt loam

24 to 60 inches—yellowish brown and light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Klickson soils on convex, commonly south- and west-facing slopes (5 percent)
- Setters soils on knobs and concave toeslopes (5 percent)

Major Uses

Woodland, grazeable woodland, cropland, pastureland and hayland

Woodland

Natural potential plant community: Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark
Estimated average annual production of timber on the Taney soil (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
Estimated average annual production of timber on the Joel soil (CMAI): Ponderosa pine—110 cubic feet per acre at 40 years of age; Douglas fir—61 cubic feet per acre at 103 years of age
General management considerations:
- Because of the fragipan and the seasonal perched water table, trees on the Taney soil are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Taney soil—Douglas fir/common snowberry; Joel soil—Douglas fir/mallow ninebark
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- Because of the erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the Taney soil and the abundant precipitation in spring and fall limit the length of the field season.
- The fragipan restricts the growth of deep-rooted crops such as alfalfa.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The steepness of slope limits the use of equipment for tillage, seeding, and other improvement practices.
- The fragipan in the Taney soil restricts the growth of deep-rooted crops such as alfalfa.

Capability Classification

6e, nonirrigated

131—Taney-Setters complex, 3 to 8 percent slopes

Composition

Taney soil and similar inclusions: 50 percent
Setters soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus, canyon benches (fig. 15)
Elevation: 2,600 to 4,000 feet
Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Taney Soil

Position on landform: Plane to concave slopes
Slope range: 3 to 8 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan, very slow through the fragipan
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Medium
Hazard of water erosion: Moderate or severe

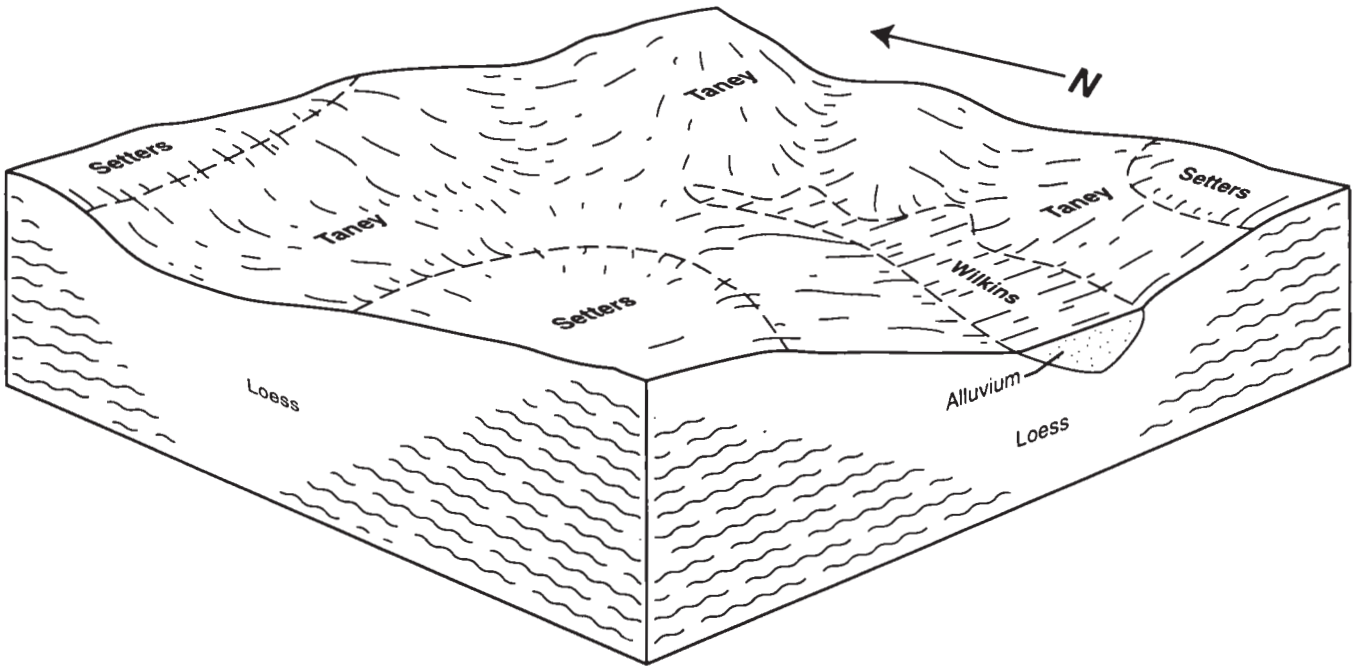


Figure 15.—Landscape relationships among the Taney, Setters, and Wilkins soils in detailed soil map units 131, 132, and 152.

Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Characteristics of the Setters Soil

Position on landform: Summits and convex slopes
Slope range: 3 to 8 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Silty clay subsoil at a depth of 18 to 24 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 14 to 22 inches in February through April

Contrasting Inclusions

- Wilkins soils along drainageways (10 percent)
- Joel soils on north- and east-facing slopes of 4 to 15 percent (5 percent)

Major Uses

Cropland (fig. 16), woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a primary concern because of the moderate erodibility of the soil, limited depth of the Taney soil, and steepness of slope.
- The seasonal perched water table in the soils and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Douglas fir/common snowberry
Estimated average annual production of timber on the Taney soil (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
Estimated average annual production of timber on the Setters soil (CMAI): Ponderosa pine—100 cubic feet per acre at 40 years of age;

Douglas fir—69 cubic feet per acre at 101 years of age

General management considerations:

- Because of the fragipan in the Taney soil and the silty clay subsoil of the Setters soil, trees on this unit are susceptible to windthrow.

Grazeable Woodland

Natural potential plant community: Douglas fir/common snowberry

General management considerations:

- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:

- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

132—Taney-Setters complex, 8 to 20 percent slopes

Composition

Taney soil and similar inclusions: 55 percent
Setters soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus (fig. 15)
Elevation: 2,600 to 4,000 feet

Figure 16.—A grainfield in an area of Taney-Setters complex, 3 to 8 percent slopes, near Reubens. Grassed waterway in center is in an area of Wilkins soil.

Average annual precipitation: About 25 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Taney Soil

Position on landform: Plane to concave slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 14 inches—dark brown silt loam
14 to 23 inches—brown and pale brown silt loam
23 to 29 inches—very pale brown and white silt loam
29 to 36 inches—light yellowish brown silt loam fragipan
36 to 63 inches—light yellowish brown and yellowish brown silty clay loam
Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan, very slow through the fragipan
Available water capacity: Moderate
Potential rooting depth: 27 to 36 inches
Runoff: Rapid
Hazard of water erosion: Severe
Depth to seasonal high water table (perched): 23 to 30 inches in February through April

Characteristics of the Setters Soil

Position on landform: Convex slopes and ridges
Slope range: 8 to 15 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 17 inches—pale brown silt loam
17 to 19 inches—light brownish gray, mottled silt loam
19 to 49 inches—brown and pale brown silty clay
49 to 61 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Silty clay subsoil at a depth of 18 to 24 inches
Runoff: Rapid
Hazard of water erosion: Severe
Depth to seasonal high water table (perched): 14 to 22 inches in February through April

Contrasting Inclusions

- Joel soils on north- and east-facing slopes of 10 to 25 percent (5 percent)
- Cavendish soils on south- and west-facing slopes (5 percent)
- Wilkins soils near drainageways (5 percent)

Major Uses

Cropland, woodland, grazeable woodland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The seasonal perched water table in the soils and the abundant precipitation in spring and fall limit the length of the field season.
- Wetness in spring increases the susceptibility of the soil to compaction if farm equipment is used.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict growth of deep-rooted crops such as alfalfa.

Woodland

Natural potential plant community: Douglas fir/common snowberry
Estimated average annual production of timber on the Taney soil (CMAI): Ponderosa pine—104 cubic feet per acre at 40 years of age; Douglas fir—71 cubic feet per acre at 100 years of age
Estimated average annual production of timber on the Setters soil (CMAI): Ponderosa pine—100 cubic feet per acre at 40 years of age; Douglas fir—69 cubic feet per acre at 101 years of age
General management considerations:
- Because of the fragipan in the Taney soil and the silty clay subsoil of the Setters soil, trees on this unit are susceptible to windthrow.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.

Grazeable Woodland

Natural potential plant community: Douglas fir/common snowberry
General management considerations:
- This unit has few limitations for use as grazeable woodland.

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- The fragipan in the Taney soil and the silty clay subsoil of the Setters soil restrict the growth of deep-rooted crops such as alfalfa.

Capability Classification

4e, nonirrigated

133—Thatuna-Naff complex, 10 to 25 percent slopes

Composition

Thatuna soil and similar inclusions: 60 percent
Naff soil and similar inclusions: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,000 to 2,800 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Thatuna Soil

Position on landform: Plane to concave, commonly north-facing slopes
Slope range: 15 to 25 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Characteristics of the Naff Soil

Position on landform: Convex slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Latahco soils near drainageways (5 percent)
- Tilma soils on low-lying knobs (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- In many years, drifting snow collects on the concave slopes. Runoff from the melting snow can increase the risk of erosion in spring.

Capability Classification

4e, nonirrigated

134—Thatuna-Naff, eroded complex, 10 to 25 percent slopes

Composition

Thatuna soil and similar inclusions: 50 percent
Naff soil, eroded, and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 2,800 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Thatuna Soil

Position on landform: Plane to concave, north- and east-facing slopes
Slope range: 15 to 25 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches

Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Characteristics of the Naff Soil, Eroded

Position on landform: Plane to convex, west-facing slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 12 inches—brown silt loam
12 to 20 inches—yellowish brown silty clay loam
20 to 60 inches—light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Latahco soils near drainageways (5 percent)
- Tilma soils on lower lying knobs (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- In many years, drifting snow collects on the concave slopes. Runoff from the melting snow can increase the risk of erosion in spring.
- As a result of past erosion, part or all of the surface layer of the Naff soil has reduced fertility and tilth.

Capability Classification

4e, nonirrigated

135—Thatuna-Naff complex, 25 to 40 percent slopes

Composition

Thatuna soil and similar inclusions: 60 percent
Naff soil and similar inclusions: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 2,800 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Thatuna Soil

Position on landform: Plane to concave, north- and east-facing slopes
Slope range: 25 to 40 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Characteristics of the Naff Soil

Position on landform: Plane to convex, west-facing slopes
Slope range: 25 to 40 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Latahco soils near drainageways (5 percent)
- Tilma soils on low-lying knobs (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• In many years, drifting snow collects on the concave slopes. Runoff from melting snow can increase the risk of erosion in spring.
• Because of the seasonal perched water table and the steepness of slope, the Thatuna soil is susceptible to slumping during wet periods.

Capability Classification

6e, nonirrigated

136—Thatuna-Naff-Tilma complex, 10 to 25 percent slopes

Composition

Thatuna soil and similar inclusions: 45 percent
Naff soil and similar inclusions: 25 percent
Tilma soil and similar inclusions: 20 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus
Elevation: 2,300 to 2,800 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 130 days

Characteristics of the Thatuna Soil

Position on landform: Plane to concave, north- and east-facing slopes
Slope range: 15 to 25 percent
Typical profile:
0 to 16 inches—very dark grayish brown silt loam
16 to 31 inches—brown silt loam
31 to 37 inches—pale brown silt loam
37 to 61 inches—yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay loam subsoil at a depth of 29 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 24 to 36 inches in February through April

Characteristics of the Naff Soil

Position on landform: Plane to convex slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 18 inches—grayish brown and dark grayish brown silt loam
18 to 25 inches—light yellowish brown silty clay loam
25 to 46 inches—pale brown silty clay loam
46 to 60 inches—brownish yellow and yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Tilma Soil

Position on landform: Lower-lying convex knobs
Slope range: 10 to 15 percent
Typical profile:
0 to 16 inches—brown and dark grayish brown silt loam
16 to 23 inches—brown silt loam
23 to 25 inches—light gray silt loam
25 to 42 inches—yellowish brown silty clay
42 to 60 inches—light yellowish brown silty clay loam
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 26 inches
Runoff: Rapid
Hazard of water erosion: Very severe
Depth to seasonal high water table (perched): 16 to 28 inches in November through April

Contrasting Inclusions

• Garfield soils on lower lying, convex knobs (5 percent)
• Latahco soils near drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
• Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
• In many years, drifting snow collects on the concave slopes. Runoff from melting snow can increase the risk of erosion in spring.
• The abrupt silty clay subsoil of the Tilma soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.

Capability Classification

4e, nonirrigated

137—Tombeall silt loam, 0 to 4 percent slopes

Composition

Tombeall soil and similar inclusions: 95 percent
Contrasting inclusions: 5 percent

Setting

Landform: Low terraces and flood plains
Slope range: 0 to 4 percent
Elevation: 800 to 1,200 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 170 days

Characteristics of the Tombeall Soil

Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—dark grayish brown silt loam
17 to 28 inches—dark grayish brown, mottled sandy loam
28 to 35 inches—brown, mottled very gravelly sandy loam
35 to 60 inches—grayish brown extremely gravelly sandy loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Available water capacity: Low
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 12 to 30 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 12 to 30 inches in February through April
Frequency of flooding: Rare

Contrasting Inclusions

• Joseph soils on gravel bars and low rises (5 percent)

Major Uses

Pastureland, hayland, cropland, rangeland

Pastureland and Hayland

General management considerations:
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage caused by livestock trampling.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• Wetness limits the production of crops in some years.

Rangeland

Natural potential plant community: Tufted hairgrass-sedge
General management considerations:
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

Capability Classification

3w, nonirrigated

138—Uhlig silt loam, 2 to 8 percent slopes

Composition

Uhlig soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Dissected alluvial terraces
Position on landform: Broad ridges and low terraces
Slope range: 2 to 8 percent
Elevation: 800 to 1,300 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Uhlig Soil

Typical profile:
0 to 15 inches—dark grayish brown and grayish brown silt loam
15 to 25 inches—brown loam

25 to 39 inches—pale brown very fine sandy loam
39 to 68 inches—pale brown and light yellowish brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Contrasting Inclusions

- Lapwai soils on low terraces and flood plains (10 percent)
- Bridgewater soils on flood plains (5 percent)

Major Uses

Cropland, building site development

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil, the hazard of erosion is a primary concern.

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.

Capability Classification

2e, nonirrigated

139—Uhlig silt loam, 8 to 20 percent slopes

Composition

Uhlig soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Dissected alluvial terraces
Slope range: 8 to 20 percent
Elevation: 800 to 1,300 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Uhlig Soil

Typical profile:
0 to 15 inches—dark grayish brown and grayish brown silt loam
15 to 25 inches—brown loam
25 to 39 inches—pale brown very fine sandy loam
39 to 68 inches—pale brown and light yellowish brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Bridgewater soils on flood plains (5 percent)
- Chard soils on convex, south- and west-facing slopes (5 percent)
- Waha soils on steep slopes of drainageways (5 percent)

Major Uses

Cropland, rangeland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Idaho fescue/forbs
General management considerations:
- This unit has few limitations for use as rangeland.

Capability Classification

3e, nonirrigated

140—Uhlig silt loam, 20 to 35 percent slopes

Composition

Uhlig soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Dissected alluvial terraces
Slope range: 20 to 35 percent
Elevation: 800 to 1,300 feet
Average annual precipitation: About 18 inches
Frost-free season (32 degrees F): About 160 days

Characteristics of the Uhlig Soil

Typical profile:
0 to 15 inches—dark grayish brown and grayish brown silt loam

15 to 25 inches—brown loam
25 to 39 inches—pale brown very fine sandy loam
39 to 68 inches—pale brown and light yellowish brown very fine sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Chard soils on south- and west-facing, convex slopes (5 percent)
- Waha soils on slopes of 20 to 45 percent (5 percent)

Major Uses

Cropland, rangeland

Cropland

Commonly grown crops: Wheat, barley, peas
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Rangeland

Natural potential plant community: Idaho fescue/forbs
General management considerations:
- This unit has few limitations for use as rangeland.

Capability Classification

6e, nonirrigated

141—Uhlorn silt loam, 8 to 20 percent slopes

Composition

Uhlorn soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Slope range: 8 to 20 percent
Elevation: 2,900 to 4,100 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Uhlorn Soil

Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Nez Perce soils on shoulders and convex slopes of 2 to 12 percent (10 percent)
- Westlake and Wilkins soils in drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.

Capability Classification

3e, nonirrigated

142—Uhlorn-Nez Perce complex, 2 to 10 percent slopes

Composition

Uhlorn soil and similar inclusions: 60 percent
Nez Perce soil and similar inclusions: 30 percent
Contrasting inclusions: 10 percent

Setting

Landform: Hills on plateaus (fig. 17)
Elevation: 2,600 to 4,100 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Uhlorn Soil

Position on landform: Plane to concave slopes
Slope range: 2 to 10 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam

23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Moderate

Characteristics of the Nez Perce Soil

Position on landform: Summits and convex slopes
Slope range: 2 to 10 percent
Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Medium
Hazard of water erosion: Moderate
Depth to seasonal high water table (perched): 12 to 20 inches in February through April
Sodicity: Slight

Contrasting Inclusions

- Vollmer soils on footslopes and ridges (5 percent)
- Latahco and Wilkins soils in drainageways (5 percent)

Major Use

Cropland (fig. 18)

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- The hazard of erosion is a concern.
- The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

Capability Classification

2e, nonirrigated

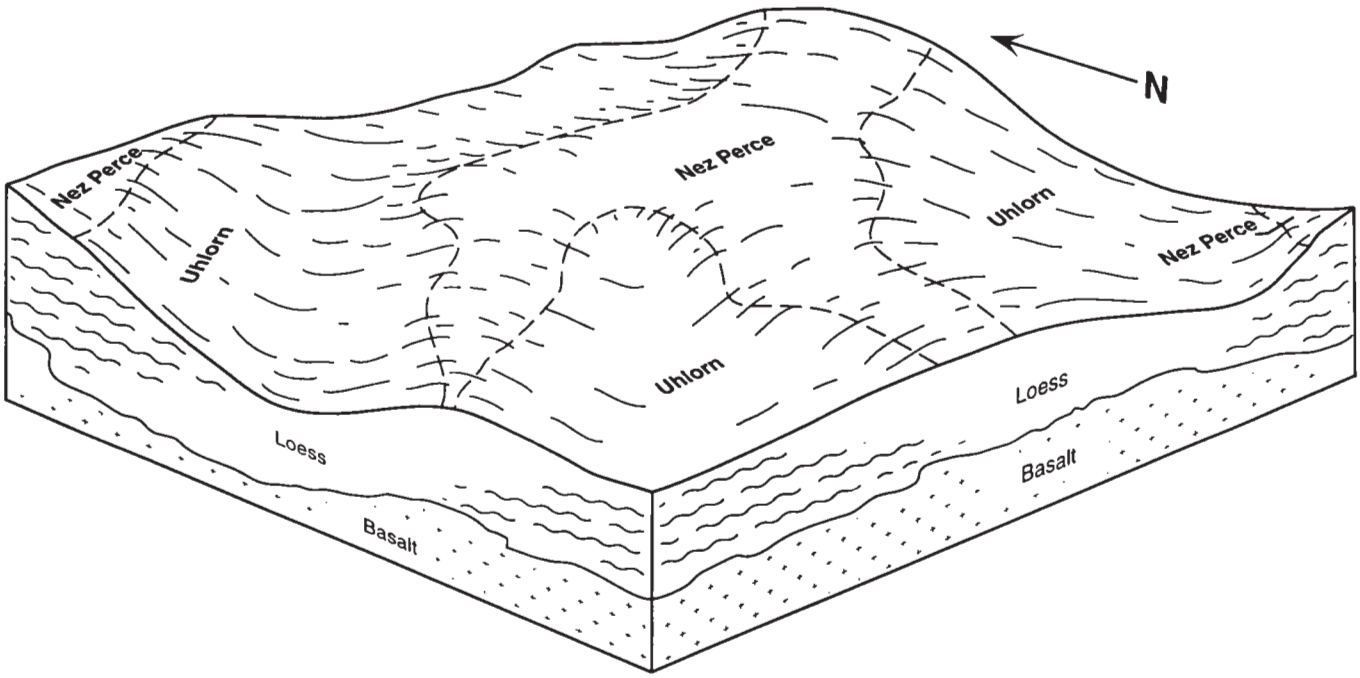


Figure 17.—Typical pattern of the soils in Uhlorn-Nez Perce complex, 2 to 10 percent slopes.

Figure 18.—An area of Uhlorn-Nez Perce complex, 2 to 10 percent slopes, southeast of Craigmont, that is used as cropland. Mason Butte is in background.

143—Uhlorn-Nez Perce complex, 10 to 20 percent slopes

Composition

Uhlorn soil and similar inclusions: 55 percent
Nez Perce soil and similar inclusions: 30 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,600 to 4,100 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Uhlorn Soil

Position on landform: Plane to concave slopes
Slope range: 10 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Nez Perce Soil

Position on landform: Shoulders and footslopes
Slope range: 10 to 20 percent
Typical profile:
0 to 11 inches—dark grayish brown silty clay loam
11 to 15 inches—brown silt loam
15 to 21 inches—light brownish gray silt loam
21 to 31 inches—brown silty clay
31 to 66 inches—brown and pale brown, calcareous silty clay
Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Available water capacity: High
Potential rooting depth: More than 60 inches

Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 14 to 27 inches
Runoff: Rapid
Hazard of water erosion: Severe
Depth to seasonal high water table (perched): 12 to 20 inches in February through April
Sodicity: Slight

Contrasting Inclusions

- Keuterville soils on north-facing slopes on Webb Ridge (5 percent)
- Vollmer soils on convex, south- and west-facing slopes (5 percent)
- Wilkins and Latahco soils in drainageways (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The abrupt silty clay subsoil of the Nez Perce soil restricts the growth of deep-rooted crops and results in droughtiness in dry years.
- The sodicity of the subsoil of the Nez Perce soil causes some nutrients to become unavailable to plants.

Capability Classification

Uhlorn soil—3e, nonirrigated; Nez Perce soil—4e, nonirrigated

144—Uhlorn-Vollmer complex, 8 to 20 percent slopes

Composition

Uhlorn soil and similar inclusions: 50 percent
Vollmer soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,600 to 4,100 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Uhlorn Soil

Position on landform: North-, east-, and west-facing slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 7 inches—dark grayish brown silt loam
7 to 17 inches—grayish brown and brown silt loam
17 to 23 inches—yellowish brown silt loam
23 to 55 inches—light yellowish brown and brown silty clay loam
55 to 69 inches—brown silty clay loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Rapid
Hazard of water erosion: Severe

Characteristics of the Vollmer Soil

Position on landform: South- and west-facing, commonly convex slopes
Slope range: 8 to 20 percent
Typical profile:
0 to 12 inches—grayish brown and brown silt loam
12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Nez Perce soils on shoulders and convex footslopes (10 percent)
- Bluesprin soils on convex, south- and west-facing slopes of 15 to 30 percent (3 percent)
- Westlake and Latahco soils in drainageways (2 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth of the Vollmer soil restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Capability Classification

Uhlorn soil—3e, nonirrigated; Vollmer soil—4e, nonirrigated

145—Urban land-Wistona complex, nearly level

Composition

Urban land: 70 percent
Wistona soil and similar inclusions: 20 percent
Contrasting inclusions: 10 percent

Setting

Landform: Low terraces and flood plains
Elevation: 730 to 800 feet
Average annual precipitation: About 13 inches
Frost-free season (32 degrees F): About 185 days

Characteristics of the Urban Land

Slope range: 0 to 3 percent
Description of areas: Streets, buildings, parking lots, and other structures within the city of Lewiston

Characteristics of the Wistona Soil

Slope range: 0 to 3 percent
Typical profile:
0 to 8 inches—brown very fine sandy loam
8 to 45 inches—brown and yellowish brown fine sandy loam
45 to 51 inches—brown, calcareous sandy loam
51 to 64 inches—brown, calcareous fine sandy loam and sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight
Frequency of flooding: Rare
Sodicity: Slight

Contrasting Inclusions

- Bridgewater soils (10 percent)

Major Use

Building site development

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil of the Wistona soil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

Capability Classification

Urban land—not assigned; Wistona soil—3w, nonirrigated

146—Uvi silt loam, 35 to 75 percent slopes

Composition

Uvi soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Canyons
Position on landform: North-facing slopes
Slope range: 35 to 75 percent
Elevation: 1,400 to 3,400 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Uvi Soil

Typical profile:
0 to 4 inches—brown silt loam
4 to 35 inches—yellowish brown loam
35 to 55 inches—brownish yellow loam
55 to 65 inches—very pale brown very gravelly loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: More than 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Carlinton soils on shoulders and footslopes of 15 to 40 percent (5 percent)
- Johnson soils on northwest-facing slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Grand fir/mallow ninebark
Estimated average annual production of timber (CMAI): Grand fir—66 cubic feet per acre at 120

years of age; Douglas fir—81 cubic feet per acre at 97 years of age; ponderosa pine—not measured

General management considerations:

- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder the natural regeneration of trees.

Grazeable Woodland

Natural potential plant community: Grand fir/mallow ninebark

General management considerations:

- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and stock water ponds and may restrict the movement of livestock.

Capability Classification

7e, nonirrigated

147—Vollmer silt loam, 3 to 10 percent slopes

Composition

Vollmer soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: Broad summits
Slope range: 3 to 10 percent
Elevation: 2,600 to 3,300 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 140 days

Characteristics of the Vollmer Soil

Typical profile:

0 to 12 inches—grayish brown and brown silt loam
12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Medium
Hazard of water erosion: Severe

Contrasting Inclusions

- Uhlorn soils on concave slopes of 3 to 20 percent (10 percent)
- Kettenbach soils on south- and west-facing, convex slopes of 8 to 15 percent (3 percent)
- Gwin soils that are on convex knobs and have slopes of 3 to 15 percent (2 percent)

Major Uses

Cropland, pastureland and hayland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils

General management considerations:

- Because of the moderate erodibility of the soil, limited soil depth, and steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Pastureland and Hayland

General management considerations:

- The moderate rooting depth limits the production of forage and results in droughtiness in dry years.

Capability Classification

4e, nonirrigated

148—Vollmer silt loam, 10 to 20 percent slopes

Composition

Vollmer soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Position on landform: South- and west-facing, commonly convex slopes
Slope range: 10 to 20 percent
Elevation: 2,800 to 3,800 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 115 days

Characteristics of the Vollmer Soil

Typical profile:

0 to 12 inches—grayish brown and brown silt loam

12 to 28 inches—brown silt loam
28 to 36 inches—pale brown cobbly silt loam
36 inches—basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Severe

Contrasting Inclusions

- Uhlorn soils on plane to concave slopes (5 percent)
- Nez Perce soils on summits (5 percent)
- Gwin soils on convex slopes (5 percent)

Major Use

Cropland

Cropland

Commonly grown crops: Wheat, barley, peas, lentils
General management considerations:
- Because of the moderate erodibility of the soil and the steepness of slope, the hazard of erosion is a primary concern.
- The moderate rooting depth restricts the growth of deep-rooted crops and increases the susceptibility of the soil to droughtiness in dry years.

Capability Classification

4e, nonirrigated

149—Watama-Flybow complex, 10 to 35 percent slopes

Composition

Watama soil and similar inclusions: 45 percent
Flybow soil and similar inclusions: 40 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 2,900 to 3,500 feet
Average annual precipitation: About 21 inches
Frost-free season (32 degrees F): About 120 days

Characteristics of the Watama Soil

Position on landform: Mounds in areas of patterned ground
Slope range: 10 to 35 percent
Typical profile:
0 to 11 inches—dark grayish brown silt loam
11 to 34 inches—grayish brown and brown silt loam
34 to 38 inches—yellowish brown gravelly silt loam
38 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Moderate
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Characteristics of the Flybow Soil

Position on landform: Intermound areas of patterned ground
Slope range: 10 to 35 percent
Typical profile:
0 to 2 inches—dark brown very gravelly silt loam
2 to 4 inches—brown very gravelly silt loam
4 inches—basalt
Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 4 to 10 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Gwin soils between mounds (10 percent)
- Rock outcrop between mounds (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Watama soil—Idaho fescue-bluebunch wheatgrass; Flybow soil—Sandberg bluegrass/forbs
General management considerations:
- The very shallow depth and content of rock fragments in the surface layer of the Flybow soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds. Because of these limitations, the Flybow soil also is very poorly suited to range seeding.
- The very low available water capacity of the Flybow soil limits the production of forage.

Capability Classification

Watama soil—4e, nonirrigated; Flybow soil—7s, nonirrigated

150—Webbridge-Agatha association, 35 to 75 percent slopes

Composition

Webbridge soil and similar inclusions: 50 percent
Agatha soil and similar inclusions: 30 percent
Contrasting inclusions: 20 percent

Setting

Landform: Canyons
Elevation: 3,900 to 5,000 feet
Average annual precipitation: About 28 inches
Frost-free season (32 degrees F): About 65 days

Characteristics of the Webbridge Soil

Position on landform: North- and east-facing slopes
Slope range: 35 to 75 percent
Typical profile:
1 inch to 0—organic mat
0 to 3 inches—light yellowish brown silt loam
3 to 17 inches—light yellowish brown silt loam
17 to 24 inches—yellowish brown cobbly clay loam
24 to 34 inches—yellowish brown very cobbly clay loam
34 to 53 inches—yellowish brown extremely cobbly loam
53 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Moderate or severe

Characteristics of the Agatha Soil

Position on landform: South- and west-facing slopes
Slope range: 35 to 75 percent
Typical profile:
1 inch to 0—organic mat
0 to 15 inches—brown loam
15 to 23 inches—brown cobbly clay loam
23 to 47 inches—light brown very cobbly clay loam and extremely cobbly loam
47 inches—fractured basalt
Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Available water capacity: Moderate
Potential rooting depth: 40 to 60 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Aquolls in drainageways (5 percent)
- Culdesac soils on gentle, concave slopes (5 percent)
- Klickson soils on south- and west-facing slopes (5 percent)
- Larabee soils on ridges and convex slopes (5 percent)

Major Uses

Woodland, grazeable woodland

Woodland

Natural potential plant community: Webbridge soil—grand fir/queencup beadlily; Agatha soil—grand fir/mallow ninebark
Estimated average annual production of timber on the Webbridge soil (CMAI): Douglas fir—36 cubic feet per acre at 113 years of age; grand fir—59 cubic feet per acre at 121 years of age; Engelmann spruce—89 cubic feet per acre at 90 years of age
Estimated average annual production of timber on the Agatha soil (CMAI): Douglas fir—59 cubic feet per acre at 104 years of age; grand fir—85 cubic feet per acre at 116 years of age; western larch—not measured
General management considerations:
- Because the volcanic ash surface layer of the Webbridge soil is fragile, excessive disturbance or compaction will reduce productivity and seedling survival.
- Because of the steepness of slope and occasional convex areas, cable yarding systems that have intermediate supports should be used. Use of cable yarding reduces the need for skid trails and roads.
- Erosion of roads and skid trails may severely deteriorate the quality of watercourses downslope.
- When openings are made in the canopy, the invasion of brushy plants can hinder natural regeneration of trees on the Agatha soil.

Grazeable Woodland

Natural potential plant community: Webbridge soil—grand fir/queencup beadlily; Agatha soil—grand fir/mallow ninebark
General management considerations:
- The cold soil temperatures and the deep snowpack in most years delay the growth of plants in spring. The grazing season is limited to summer and fall.
- The characteristic understory plant community produces very little forage for livestock when the canopy is closed.
- The steepness of slope severely limits construction of improvements such as fences, water pipelines, and

stock water ponds and may restrict the movement of livestock.
• The volcanic ash surface layer of the Webbridge soil is easily compacted during wet periods.

Capability Classification

7e, nonirrigated

151—Westlake-Latahco complex, 0 to 3 percent slopes

Composition

Westlake soil and similar inclusions: 50 percent
Latahco soil and similar inclusions: 40 percent
Contrasting inclusions: 10 percent

Setting

Landform: Drainageways on plateaus
Elevation: 2,500 to 4,200 feet
Average annual precipitation: About 22 inches
Frost-free season (32 degrees F): About 110 days

Characteristics of the Westlake Soil

Position on landform: Narrow, low-lying areas near drainageway channels
Slope range: 0 to 3 percent
Typical profile:
0 to 10 inches—dark gray silt loam
10 to 21 inches—dark gray silt loam
21 to 49 inches—gray and light gray, mottled silt loam
49 to 64 inches—light gray, mottled silt loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Seasonal high water table at a depth of 18 to 30 inches
Runoff: Very slow
Hazard of water erosion: Slight
Depth to seasonal high water table (apparent): 18 to 30 inches in February through May
Frequency of flooding: Occasional in February through April

Characteristics of the Latahco Soil

Position on landform: Higher areas and toeslopes above drainageway channels
Slope range: 0 to 3 percent
Typical profile:
0 to 13 inches—very dark grayish brown silt loam
13 to 22 inches—very dark gray silt loam
22 to 35 inches—light brownish gray and white silt loam
35 to 43 inches—grayish brown, mottled silt loam
43 to 60 inches—pale brown silty clay loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silt loam subsoil at a depth of 18 to 35 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 18 to 34 inches in February through May
Frequency of flooding: Occasional in February through April

Contrasting Inclusions

• Poorly drained soils that have stratified textures and are in depressions and near stream channels (10 percent)

Major Uses

Pastureland, hayland, cropland, rangeland

Pastureland and Hayland

General management considerations:
• Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
• Because of wetness in spring, this unit is susceptible to soil compaction and plant damage as a result of livestock trampling.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
• Wetness limits the production of crops in some years.
• Because of wetness in spring, this unit is susceptible to compaction if farm equipment is used.

Rangeland

Natural potential plant community: Tufted hairgrass-sedge
General management considerations:
• The cold temperatures reduce plant growth in spring. The grazing season is limited to summer and fall.
• Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

Capability Classification

3w, nonirrigated

152—Wilkins silt loam, 0 to 5 percent slopes

Composition

Wilkins soil and similar inclusions: 85 percent
Contrasting inclusions: 15 percent

Setting

Landform: Drainageways on plateaus (fig. 15)
Slope range: 0 to 5 percent
Elevation: 2,800 to 4,500 feet
Average annual precipitation: About 24 inches
Frost-free season (32 degrees F): About 100 days

Characteristics of the Wilkins Soil

Typical profile:
0 to 15 inches—dark grayish brown silt loam
15 to 20 inches—light gray silt loam
20 to 26 inches—pale brown and grayish brown silty clay
26 to 52 inches—light gray and light brownish gray, mottled silty clay
52 to 64 inches—light olive gray, mottled clay loam
Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Available water capacity: High
Potential rooting depth: More than 60 inches
Restriction to rooting depth: Abrupt silty clay subsoil at a depth of 18 to 30 inches
Runoff: Slow
Hazard of water erosion: Slight
Depth to seasonal high water table (perched): 15 to 20 inches in February through May
Frequency of flooding: Occasional in March through May

Contrasting Inclusions

- Setters soils on toeslopes of adjacent hills (5 percent)
- Westlake soils on flood plains (5 percent)
- Taney soils on toeslopes and footslopes of adjacent hills (3 percent)
- Poorly drained soils in drainageways (2 percent)

Major Uses

Pastureland, hayland, cropland, rangeland

Pastureland and Hayland

General management considerations:
- The cold temperatures limit plant growth in spring and late in fall. The grazing season is limited to summer and early in fall.
- Periodic flooding and the seasonal high water table limit the choice of plants that are suitable for maximum production of forage.
- Because of wetness in spring, this unit is susceptible to soil compaction and plant damage caused by livestock trampling.

Cropland

Commonly grown crops: Wheat, barley
General management considerations:
- The short growing season limits the production of some crops.
- Wetness limits the production of crops in some years.
- The abrupt silty clay subsoil restricts the growth of deep-rooted crops.

Rangeland

Natural potential plant community: Tufted hairgrass-sedge
General management considerations:
- The cold temperatures limit plant growth in spring. The grazing season is limited to summer and fall.
- Because of the seasonal high water table, this unit is susceptible to soil compaction during wet periods.

Capability Classification

4w, nonirrigated

153—Wistona very fine sandy loam, 0 to 3 percent slopes

Composition

Wistona soil and similar inclusions: 90 percent
Contrasting inclusions: 10 percent

Setting

Landform: Low terraces and flood plains
Slope range: 0 to 3 percent
Elevation: 720 to 1,240 feet
Average annual precipitation: About 13 inches
Frost-free season (32 degrees F): About 185 days

Characteristics of the Wistona Soil

Typical profile:
0 to 8 inches—brown very fine sandy loam
8 to 45 inches—brown and yellowish brown fine sandy loam
45 to 51 inches—brown, calcareous sandy loam

51 to 64 inches—brown, calcareous fine sandy loam and sandy loam
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Available water capacity: High
Potential rooting depth: More than 60 inches
Runoff: Slow
Hazard of water erosion: Slight
Frequency of flooding: Rare
Sodicity: Slight

Contrasting Inclusions

- Bridgewater soils (5 percent)
- Lapwai soils (3 percent)
- Aquents near river channels (2 percent)

Major Uses

Building site development, rangeland

Building Site Development

General management considerations:
- Excavation can expose soil material that is highly susceptible to erosion by water and wind.
- The sodicity of the subsoil causes some nutrients to become unavailable to plants.
- This unit is poorly suited to many ornamental plants and lawn grasses if the surface layer becomes sodic.

Rangeland

Natural potential plant community: Bluebunch wheatgrass-Sandberg bluegrass
General management considerations:
- This unit has few limitations for use as rangeland.

Capability Classification

3w, nonirrigated

154—Zaza-Sweiting complex, 4 to 20 percent slopes

Composition

Zaza soil and similar inclusions: 50 percent
Sweiting soil and similar inclusions: 35 percent
Contrasting inclusions: 15 percent

Setting

Landform: Hills on plateaus
Elevation: 4,200 to 4,400 feet
Average annual precipitation: About 26 inches
Frost-free season (32 degrees F): About 80 days

Characteristics of the Zaza Soil

Position on landform: Intermound areas in areas of patterned ground
Slope range: 4 to 20 percent
Typical profile:
0 to 4 inches—brown very stony loam
4 to 14 inches—brown very cobbly loam and extremely cobbly loam
14 inches—basalt
Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Available water capacity: Very low
Potential rooting depth: 10 to 20 inches
Runoff: Very rapid
Hazard of water erosion: Very severe

Characteristics of the Sweiting Soil

Position on landform: Mounds in areas of patterned ground
Slope range: 4 to 20 percent
Typical profile:
0 to 8 inches—dark grayish brown silt loam
8 to 12 inches—brown silt loam
12 to 23 inches—brown silty clay loam
23 to 31 inches—light yellowish brown very gravelly clay
31 inches—fractured basalt
Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Available water capacity: Low
Potential rooting depth: 20 to 40 inches
Runoff: Rapid
Hazard of water erosion: Very severe

Contrasting Inclusions

- Moderately deep, clayey soils on shoulders of ridges (10 percent)
- Flybow soils between mounds (5 percent)

Major Use

Rangeland

Rangeland

Natural potential plant community: Zaza soil—Sandberg bluegrass/forbs; Sweiting soil—Idaho fescue-bluebunch wheatgrass
General management considerations:
- The cold temperatures limit plant growth in

spring. The grazing season is limited to summer and fall.

- The shallow depth and the content of rock fragments in the surface layer of the Zaza soil severely limit construction of improvements such as fences, water pipelines, and stock water ponds.
- The very low available water capacity of the Zaza soil limits the production of forage.

Capability Classification

Zaza soil—6e, nonirrigated; Sweiting soil—4e, nonirrigated

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

General management needed for crops and pasture is suggested in this section. The estimated yields of the main crops and pasture plants are listed, the system of land capability classification used by the Natural Resources Conservation Service is explained, and prime farmland is described.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Crops

Prepared by Glenn Shea, area agronomist, and Robert Fredericksen and Frank Gariglio III, district conservationists, Natural Resources Conservation Service.

The cropland in the survey area is highly variable. Elevation ranges from 900 feet near Lewiston to more than 4,500 feet near Westlake and Mason Butte. Precipitation ranges from about 12 inches at the low elevations to 26 inches at the high elevations. The low elevations have the highest temperatures and longest growing seasons, and the high elevations have colder temperatures and shorter growing seasons.

The soils are also highly variable. Some areas have relatively flat slopes, and other areas have very steep slopes. The soils in the low precipitation zones are generally neutral or alkaline in the surface layer, while the soils in the high precipitation zones tend to be acidic. Erosion is a concern on all of the soils; however, those with steeper slopes and higher precipitation are subject to the greatest risk of erosion.

Loss of topsoil through erosion is a very serious concern on the majority of the cropland in the survey area. The resulting sedimentation fills watercourses, decreases the potential for fisheries, and reduces the quality of water for recreation and drinking. Soil productivity is reduced as the surface layer is lost. It is estimated that 4 to 6 inches of topsoil has already been eroded from many areas in the past 80 years *(21)*.

Extensive management is needed to reduce soil erosion. Managing crop residue, farming across the slope or on the contour, stripcropping with alternating strips of high-residue and low-residue crops across the slope, and using grasses and legumes in rotation with annual crops help to control erosion. Structural

practices, such as construction of water- and sediment-control basins and terraces, can also be used in some areas to reduce the rate of runoff and to minimize erosion.

The survey area has about 376,000 acres of nonirrigated cropland. Of this, about 170,000 acres are in Lewis County and 206,000 acres are in Nez Perce County. The acreage of irrigated cropland is very minor. The main crop grown is soft white winter wheat. It is grown in rotation with spring peas, lentils, spring grain, canola, and other annually tilled crops. Some rotations also include long-term stands of grass seed. Pasture and hay crops include alfalfa, clover, and grass. The relative amount of pastureland and hayland increases as elevation and rainfall increase.

At the lower elevations, winter wheat is produced in a wheat-summer fallow rotation because the amount of precipitation received is so low. The areas that receive higher amounts of precipitation are suitable for annual cropping. In these areas, winter wheat commonly is grown in rotation with spring peas or lentils. A 3-year rotation that commonly includes wheat, barley, and peas or lentils is used on smaller acreages. Some producers use longer term rotations that include grass for seed and alfalfa with the annually grown crops.

A balanced fertility management program that is based on soil tests is needed for the production of all crops. Winter wheat is the most commonly fertilized crop. Carryover nitrogen levels generally are insufficient to produce an adequate crop. As precipitation increases, the hazard of leaching in winter of nitrogen applied in fall increases. Applying nitrogen fertilizer in fall and again in spring and applying slow-release nitrogen help to reduce the risk of leaching. Smaller amounts of sulfur, potassium, and phosphorous are also needed.

The Tammany area (general soil map units 1 and 2) is at the lowest elevations and is the warmest and driest region in the survey area. Typical soils in this area are those of the Broadax, Oliphant, and Endicott series. These soils are either moderately deep to a calcium- and silica-cemented hardpan or are very deep. In some areas these soils are interspersed with soils that are affected by high levels of sodium, such as those of the Hatwai, Bryden, and Redmore series. The surface layer of these soils characteristically has degraded structure and consequently has a limited water infiltration rate, which can restrict the available water capacity and limit crop yields. The available water capacity of the moderately deep soils, such as the Endicott soils, is also limited by the effective rooting depth. The annual rainfall in the Tammany area is about 12 to 16 inches, the majority of which falls in winter and spring.

Spring crops in the Tammany area are commonly limited by the early onset of hot, dry weather. In addition, weed control is needed earlier in areas of summer fallow in this area than in other areas of cropland throughout the survey area. The longer period of weed control can increase the risk of erosion, especially if a traditional method of mechanical control is used.

The main conservation practices used in the Tammany area include conservation cropping systems, crop residue management, cross-slope farming, field stripcropping, seeding of pastureland and hayland, and construction of gradient terraces. Practices needed on sodium-affected soils include conservation cropping systems, crop residue management, and nutrient management. These practices increase organic matter content and improve moisture intake.

The Palouse and Camas Prairie areas (general soil map units 3 and 4) are at intermediate elevations and receive 20 to 24 inches of precipitation. Typical soils are those of the Palouse, Naff, and Thatuna series, which are at the higher elevations north of the Clearwater and Potlatch Rivers, and those of the Uhlorn and Nez Perce series, which are on the plateau south of the Clearwater River. The soils in these areas are very deep and are well drained or moderately well drained. Because of the topography, soil erosion is the main limitation, especially in the steep, concave areas on north-facing slopes where drifted snow collects.

Typical crops grown in these areas are winter wheat, spring and fall barley, spring peas, and lentils. Specialty crops include bluegrass for seed, spring canola, winter rapeseed, Austrian winter peas, and buckwheat.

Use of practices such as crop rotation with annual cropping sequences, crop residue management, no-till farming, stripcropping, divided slope farming, and grassed waterways are needed to control erosion. In addition, sediment basins can be installed to improve water quality by collecting sediment from runoff. Lime can be applied to increase the reaction (pH) of the soil and thus increase the production of field crops, especially forage legume and pulse crops.

The Gifford, Reubens, and North Winchester areas (general soil map units 5 and 6) are at higher elevations and receive about 22 to 26 inches of precipitation. Typical soils are those of the Taney, Setters, Carlinton, Southwick, Driscoll, and Larkin series. These soils support forests. The soils commonly are deficient in sulfur and have low reaction

(pH) in the surface layer. They are moderately deep to a fragipan or are very deep. The fragipan restricts rooting depth and results in a seasonal perched water table in spring, which affects the timing of cultivation and seeding. Because of the seasonal perched water table, the soils are susceptible to compaction if tilled early in spring.

These areas are suitable for annual cropping. Typical crops grown include winter wheat, spring barley, dry peas, and lentils. Smaller acreages of rapeseed, winter peas, bluegrass, alfalfa, and spring canola are grown in rotation.

The main conservation practices used in these areas to control soil erosion include conservation cropping systems, crop residue management, conservation tillage, no-till farming, cross-slope farming, and grassed waterways. In addition, sediment basins can be installed to improve water quality by collecting sediment from runoff. Lime can be applied to increase the reaction (pH) of the soil and thus increase the production of field crops, especially forage legume and pulse crops.

The Westlake and Mason Butte areas (general soil map unit 7) generally have a colder, wetter climate than the other areas of cropland in the survey area. Typical soils in these areas are those of the Boles and Joel series. The cold soil temperatures restrict the kinds of crops that can be grown. Spring barley, hay, and pasture are the most commonly grown crops. Cold temperatures in winter restrict most cropping in fall. The soils have a moderate or high organic matter content and are very deep. In some bottomland areas, a seasonal perched water table affects the timing of cultivation and seeding in spring.

Conservation practices such as conservation cropping systems, crop residue management, construction of grassed waterways, seeding of pastureland and hayland, proper grazing use, and cross-slope farming commonly are used in these areas.

Pastureland and Hayland

Prepared by R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

About 52,000 acres of the survey area are used for the production of nonirrigated hay and pasture. Of this, about 30,000 acres are in Lewis County and 22,000 acres are in Nez Perce County. The soils used primarily for pasture are on bottomlands and flood plains, are commonly extremely gravelly, and are generally too wet or too gravelly to be used for crop production. Some upland soils have been cleared of timber and seeded to grasses and legumes for pasture and hay. Hay is also grown in rotation on cropland soils at middle to high elevations in the survey area.

Suitable grasses grown as pasture and hay include orchardgrass, smooth brome, tall fescue, and timothy. Alfalfa hay is suited to the drier soils on uplands. Legumes grown include alsike clover and red clover. Individual fields of pasture and hay typically are less than 100 acres in size and are commonly used for livestock operations. One or two cuttings of hay are harvested early in summer, and then livestock are allowed to graze the fields throughout the rest of the summer and in fall.

The main limitations for the production of hay and pasture include occasional or frequent flooding and soil wetness. Livestock grazing should be controlled to prevent compaction of the soil and trampling of plants when the soil is wet. Other limitations include gravelly surface layer textures and low available water capacity. Use of high-yielding plants that are adapted to the individual soils is essential for maximum production.

More information that can be used in planning pasture management is given in the section "Detailed Soil Map Units." More detailed information can be obtained from the local office of the Natural Resources Conservation Service.

Pastureland and hayland management practices are needed to maintain a high production of forage. Livestock grazing should be controlled to prevent excessive grazing that results in damage to the plants and soils. Excessive grazing can alter the plant community so that it has a higher content of less desirable plants, and it can leave the soil bare and subject to erosion. The invasion of undesirable and noxious weeds, such as yellow starthistle, oxeye daisy, and Canada thistle, is a serious threat to the production of pasture in the survey area. Overgrazing of fields adjacent to streams can result in damage to riparian vegetation and can reduce the stability of the streambanks and the quality of watercourses downstream.

Proper grazing use is needed to maintain the content of desirable forage plants. Grazing should be deferred in spring until the plants reach a height of 8 inches. Planned grazing systems that include rotation of pastures allow adequate rest for regrowth of plants. For most pasture species, leaving the stubble at a height of 4 inches at the end of the grazing period allows for rapid recovery.

Pastureland management practices that facilitate controlled grazing systems include construction of fences and livestock water developments. Fertilizer and herbicides are needed for high yields. A fertilization program should include proper applications

of nitrogen, phosphorous, and sulfur based on soil tests.

Hayland management practices included additions of appropriate fertilizers and soil amendments, harvesting at the proper growth stage, and leaving adequate stubble to protect the plants in winter.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations also are considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in the table are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops *(18)*. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals 1 through 8. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation.

Class 7 soils have very severe limitations that make them unsuitable for cultivation.

Class 8 soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, 2e. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by *w, s,* or *c* because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The acreage of soils in each capability class and subclass is shown in table 4. The capability classification of map units in this survey area is given in the section "Detailed Soil Map Units."

Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forest land, or other land, but it is not urban or built-up land or water areas. The soil qualities, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. It is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

A recent trend in land use in some parts of the survey area has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

The map units in the survey area that are considered prime farmland are listed in this section. This list does not constitute a recommendation for a particular land use. On some soils included in the list, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps. The soil qualities that affect use and management are described under the heading "Detailed Soil Map Units."

The map units that meet the requirements for prime farmland are:

12 Boles-Joel complex, 1 to 8 percent slopes
70 Lapwai-Bridgewater complex, 1 to 4 percent slopes
87 Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes
89 Naff-Palouse complex, 2 to 8 percent slopes
93 Naff-Thatuna complex, 2 to 10 percent slopes
97 Nez Perce silty clay loam, 2 to 10 percent slopes
98 Nez Perce silty clay loam, dry, 1 to 4 percent slopes
100 Oliphant silt loam, 1 to 4 percent slopes
102 Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes
106 Palouse-Athena complex, 2 to 8 percent slopes
113 Setters silt loam, 2 to 8 percent slopes
138 Uhlig silt loam, 2 to 8 percent slopes
142 Uhlorn-Nez Perce complex, 2 to 10 percent slopes
153 Wistona very fine sandy loam, 0 to 3 percent slopes

Native Grazing Land

Prepared by R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

The survey area has about 380,000 acres of native grazing land, of which 197,000 acres are rangeland and 183,000 acres are grazeable woodland (fig. 19). About 162,000 acres of the rangeland are in Nez Perce County, and about 35,000 acres are in Lewis County (fig. 20). About 110,000 acres of the grazeable woodland are in Nez Perce County, and about 73,000 acres are in Lewis County.

The rangeland is primarily in canyons adjacent to the Clearwater, Snake, and Salmon Rivers and their tributaries (general soil map units 10, 11, 12, and 13). Some rangeland is also in gently sloping areas adjacent to the canyon rims; however, most of the native grassland above the steep canyonsides is now cultivated because the soils in these areas are relatively deep and are free of rock fragments.

The dominant climax vegetation of the areas of rangeland consists of bluebunch wheatgrass and Sandberg bluegrass at the lower elevations and bluebunch wheatgrass and Idaho fescue at the higher

Figure 19.—Native grazing land in canyons. Linville and Kettenbach soils are on the lower slopes, and Klickson soils, which support timber, are on the upper slopes. Elevation and aspect control the distribution of the soils and plant communities in the canyons.

elevations. The rangeland plant communities are 70 to 80 percent grasses, 10 to 15 percent forbs, and 5 to 15 percent shrubs.

Several plants of special interest are within the survey area. Eight federally recognized or proposed endangered species are in general soil map unit 11. Because much of the area in this unit is unexplored, knowledge of the vascular plant populations is sketchy. The plants of special interest include *Calamagrostis tweedyi, Cyripedium calceolus parviflorum, Halimolobos perplexa perplexa, Haplopappus liatriformis, Lomatium rollonsii, Mirabilis macfarlan, Penstemon elegantulus,* and *Silene spaldingii.* Eleven plant species on the Federal watch list are presumed to grow in areas of this same unit.

Rangeland in the survey area has undergone intense pressure from livestock grazing since the late 1800's, and the plant communities have been altered substantially. The invasion of weeds into the areas of rangeland in canyons has drastically reduced the production of forage. In the early 1900's, annual grasses, such as soft chess, medusahead wildrye, and ventenatagrass, invaded the areas of rangeland and replaced the perennial native grasses. Later in the 1900's, broadleaf weeds, such as goatweed and yellow starthistle, competed with the annual grasses and they now are dominant in the plant communities on several thousand acres. The native grasses commonly are unable to regenerate naturally because the seedlings cannot compete with the weedy annual species.

Grazeable woodland is intermixed with the rangeland at the higher elevations in canyons (general soil map units 12 and 13). Woodland is dominant on the northerly aspects, and rangeland is dominant on the more southerly exposures. The open, forested areas generally have a good stand of native vegetation, and they produce abundant forage for

Figure 20.—An area of rangeland on Mallory soil that is in excellent condition. Idaho fescue/forbs is the plant community.

livestock and wildlife. The range condition of these areas typically is better than other areas of grazing land in the survey area. These areas receive more precipitation for plant growth and they traditionally are grazed later in the season, which encourages growth of the native perennial grasses.

Grazeable woodland also is on the upper plateaus adjacent to the canyons (general soil map units 6, 7, 8, and 9). These forested areas vary from open stands of ponderosa pine and Douglas-fir, which have excellent natural potential for forage production, to dense stands of grand fir, which produce forage for only a short time following the opening of the canopy by timber harvesting or fire.

The primary livestock enterprises in the survey area are cow-calf and ewe-lamb operations. Smaller acreages of grazing land are used for horses and mules.

As spring growth begins, the livestock are turned onto the rangeland and are moved to the higher elevations as the season and forage conditions allow. Normally, livestock are turned onto the rangeland in mid-April. Most livestock spend the summer and the early part of fall in the forested areas. In the early part of October to mid-October, the livestock are rounded up, calves are weaned, and the brood cow herd is moved to the home range and to wintering areas. Typically, livestock are kept in a feedlot for some

period during winter. Feed for this period is either produced locally or imported into the area. Calving generally occurs during January through March.

The rangeland and grazeable woodland in the survey area provide valuable habitat for several species of wildlife. In particular, the riparian areas adjacent to perennial streams and intermittent draws produce diverse native shrubs and forage plants that provide critical habitat for wildlife.

Rangeland

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

Table 6 shows, for each soil that supports rangeland vegetation suitable for grazing, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Each range site is identified by a name that includes soil or topographic characteristics, the precipitation zone, and the key indicator species in the plant community. For some range sites, no single species is dominant in the forbs layer so "forbs" is given instead of a particular species. Names of the plant species are abbreviated. The abbreviations are defined in the National List of Scientific Plant Names *(22)*.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation.
The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The primary objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Proper range management should protect the soil, result in optimum production of forage for livestock and wildlife, control undesirable weeds, and maintain or improve the associated scenic, watershed, and esthetic value.

The primary management practice needed on rangeland in this survey area is use of planned grazing systems. These systems allow plants to achieve sufficient growth in spring to withstand grazing pressure, allow for periodic rest or deferment of grazing, and allow for removal of livestock when the optimum amount of forage has been grazed. The characteristics of the soils and the slope severely limit

use of range improvement practices, such as range seeding, cross fencing, and installing livestock water developments. These practices are difficult to implement and are costly. Range improvement practices commonly are limited to use of planned grazing systems and proper grazing use.

If planned grazing systems are used, two or more grazing units are alternately rested and grazed in a planned sequence for a period of years. Rest periods for plant recovery are established during the growing season for key plants or throughout the year.

Proper grazing use can be achieved by grazing at an intensity that maintains or improves the quantity and quality of desirable vegetation and maintains enough plant cover to protect the soil. Proper use is determined by monitoring the grazing use of key forage species. In general, proper use is achieved when no more than 50 percent of the current year's growth of key species is grazed.

Range seeding is used to produce more desirable forage for grazing animals and to provide more plant cover for erosion control. Because the steepness of slope and stoniness of the soils severely restrict use of conventional machinery, range seeding in this survey area is limited mainly to aerial or hand broadcast applications. Thousands of acres in the survey area support sparse native plants and abundant noxious and undesirable weeds. Seeding helps to establish desirable vegetation in these areas. Noxious weeds should be controlled in areas where range seeding is used.

Woodland Understory Vegetation

By R. Susan Burnworth, area range conservationist, Natural Resources Conservation Service.

Woodland understory vegetation consists of grasses, forbs, and shrubs that grow beneath the forest canopy. Some woodland, if well managed, can produce enough understory vegetation to support grazing of livestock and wildlife without damage to the timber resources. The composition of the understory vegetation within a forested area is determined by the type of soil, the age and type of trees, the density of the forest canopy, and the depth and condition of the forest litter.

The amount of forage produced in an area of woodland depends mainly on the amount of light that reaches the forest floor. Many forage plants require large amounts of sunlight; thus, production decreases over time as the forest canopy closes, regardless of the degree of grazing. After the forest canopy is opened by timber harvesting or fire, there generally is an increase in the production of understory plants for a number of years. As the canopy closes, production decreases. In many kinds of woodland, the density of the tree canopy that provides maximum wood production allows for production of only sparse understory vegetation.

Three climax dominant tree species are in the survey area—ponderosa pine, Douglas fir, and grand fir. These species have been classified into distinct forest habitat types. A habitat type is a collective term for an environment that has the potential to support similar plant associations prior to disturbances such as fire, flooding, grazing, logging, or epidemics. The habitat types represented in this survey area are ponderosa pine/Idaho fescue, ponderosa pine/common snowberry, Douglas fir/common snowberry, Douglas fir/mallow ninebark, grand fir/longtube twinflower, grand fir/mallow ninebark, and grand fir/queencup beadlily. These habitat types have been correlated with those identified in "Forest Habitat Types of Northern Idaho: A Second Approximation" *(8)*.

The ponderosa pine habitat types represent the driest forest types in the survey area, and they commonly have an open parkland appearance. These habitat types generally produce abundant forage that includes Idaho fescue, bluebunch wheatgrass, and numerous forbs. The ponderosa pine/common snowberry habitat type is dominantly low shrubs, including common snowberry, Saskatoon serviceberry, low Oregongrape, and Woods rose.

Douglas fir habitat types are on many soils in the survey area. These habitat types typically have a moderately dense to dense tree canopy, and the understory is dominantly low to medium shrubs such as mallow ninebark, creambush oceanspray, common snowberry, and white spirea. Forage commonly is sparse in these areas because the understory consists of less than 25 percent herbaceous plants such as pine reedgrass, Columbia brome, elk sedge, and associated forbs.

The grand fir habitat types are on the more moist soils in the survey area. These habitat types typically do not produce grazeable woodland unless the tree canopy is opened by disturbance. The understory vegetation is comprised mostly of low herbaceous plants such as longtube twinflower, goldthread, and spreading sweetroot. The dominant shrubs are big huckleberry, common snowberry, and baldhip rose.

Table 7 shows, for each soil suitable for woodland, the potential for producing understory vegetation. The total production of understory vegetation includes the herbaceous plants and the leaves, twigs, and fruit of woody plants up to a height of 4.5 feet. It is expressed in pounds per acre of air-dry vegetation in favorable,

normal, and unfavorable years. In a favorable year, soil moisture is above average during the optimum part of the growing season; in a normal year, soil moisture is average; and in an unfavorable year, it is below average.

The table also lists the common names of the characteristic vegetation on each soil and the *composition*, by percentage of air-dry weight, of each kind of plant. The table shows the kind and percentage of understory plants expected under a canopy density that is most nearly typical of woodland in which the production of wood crops is highest.

Management objectives on grazeable woodland should include grazing at an intensity that will maintain the quality of forage without damaging the timber resources. Maintaining grazeable woodland requires both woodland and grazing management. Woodland conservation practices, such as thinning, open the forest canopy and increase the production of forage.

In areas of grazeable woodland, livestock commonly concentrate in riparian areas along streams and in areas where the canopy is open and forage is abundant. To avoid damaging the understory vegetation, improved grazing management practices are needed to encourage even distribution of livestock.

The season of use and the length of grazing periods should be based on the key forage species. In general, no more than 50 percent of the growth, by weight, should be grazed during the growing season. Conservation practices, such as use of fences and livestock water developments, can be used in some areas to promote more uniform distribution of livestock.

Woodland Management and Productivity

By Donald Larson, area forester, and Gary Kuhn, State forester, Natural Resources Conservation Service.

In 1895, the Nez Perce Indian Reservation was opened for settlement and the demand for lumber increased dramatically. Several towns in what are now Lewis and Nez Perce Counties were platted, and the settlers that arrived needed lumber. Among the first enterprises to be established were sawmills. Several towns, including Westlake, Forest, Morrowtown, Kippen, Reubens, Chesley, Lookout, Melrose, and Winchester, had sawmills. The lumber at these mills was produced primarily for use in these towns and on the surrounding farms.

On July 4, 1910, Craig Mountain Lumber Company sawed its first log. The lumber produced was shipped to outside markets. This was essentially the beginning of the lumber industry in the survey area.

In the early days, logging was done with horses. Horsedrawn wagons were used to haul the logs if they were cut more than skidding distance from a mill. Ponderosa pine was the major timber species, but large old-growth western larch (tamarack) and Douglas fir were cut in the Forest, Soldiers Meadow, and Mason Butte areas. When the Craig Mountain Lumber Company began operation, logging methods also began to change. The company built railroads into the Soldiers Meadow, Mason Butte, and Craig Junction areas. Logs were brought to the mill pond (Lapwai Lake) on trains. Horses continued to be used to skid logs until the late 1930's, but gradually the horses were replaced by tractors and logging arches.

In 1927, the Clearwater Timber Company completed a mill at Lewiston. In 1931, three timber companies merged and the mill at Lewiston became part of Potlatch Forests Incorporated, now Potlatch Corporation. Timber from the Craig Mountain and Camas Prairie areas was sent to this mill at Lewiston.

The Potlatch Corporation mill is still in operation, and it now includes a plywood plant, kraft pulp mill, paperboard mill, and tissue and toweling mill. The Craig Mountain Lumber Company was sold to Hallack and Howard in 1950 and then to the Boise Cascade Company in 1960. In 1964, the old Craig Mountain Lumber Company mill was closed.

Lumbering is still very important to the economy of the Camas Prairie area. Channel Lumber Company built a mill at Craigmont in 1958. It is still in operation today.

Timber species in the survey area include ponderosa pine, western larch, Douglas fir, grand fir, lodgepole pine, Engelmann spruce, and subalpine fir. Engelmann spruce and subalpine fir are only in the cold draws and on north-facing slopes at elevations above 4,000 feet. Ponderosa pine is the dominant species on Camas Prairie, east of Mason Butte. Pine, larch, and fir are common in areas west and south of Mason Butte and on the higher elevations of Craig Mountain. Douglas fir grows on the northwest aspects and grand fir on the north and east aspects in draws. Western larch is mainly in the Forest and Soldiers Meadow areas. Lodgepole pine is in areas where wildfires or logging followed by burning has occurred.

The major forest plant communities in the survey area are ponderosa pine/common snowberry, Douglas fir/common snowberry, Douglas fir/mallow ninebark (fig. 21), and grand fir/longtube twinflower. Brush competition is an important concern in these plant communities. Common snowberry, mallow ninebark, creambush oceanspray, and Rocky Mountain maple thrive after the forest canopy is removed, severely delaying the natural regeneration of ponderosa pine

and Douglas fir seedlings. In areas of grand fir, Rocky Mountain maple increases significantly after harvesting and competes with the natural regeneration of the plant community. Piling and burning the logging slash limits sprouting of these shrubs and allows for natural regeneration of the plant community.

The topography of the survey area is very diverse. Many of the forested soils are in nearly level areas ranging to areas on gently rolling hills; however, the upper breaks of the canyons of the Salmon and Clearwater Rivers also support timber. The steepness of slope affects logging practices. Tractor and wheeled skidding equipment can cause soil damage, including compaction, displacement, and erosion, in areas that have slopes of more than 35 percent. Skyline and cable yarding equipment should be used in these areas. Construction and location of roads and skid trails is also more difficult in the steeper areas.

Figure 21.—A mature stand of ponderosa pine in an area of Joel silt loam, 8 to 16 percent slopes. Douglas fir/mallow ninebark is the plant community.

The habitat classification system used for this survey is given in "Forest Habitat Types of Northern Idaho: A Second Approximation" *(8)*. Each named component in the detailed soil map units that supports forest land has been correlated to a specific habitat type.

Table 8 can help woodland owners or forest managers plan the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for an indicator tree species. The number indicates the volume, in cubic meters per hectare per year, which the indicator species can produce in a pure stand under natural conditions. The number 1 indicates low potential productivity; 2 or 3, moderate; 4 or 5, moderately high; 6 to 8, high; 9 to 11, very high; and 12 to 39, extremely high. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *R* indicates steep slopes; *X*, stoniness or rockiness; *W*, excess water in or on the soil; *T*, toxic substances in the soil; *D*, restricted rooting depth; *C*, clay in the upper part of the soil; *S*, sandy texture; *F*, a high content of rock fragments in the soil; *L*, low strength; and *N*, snowpack. The letter *A* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, F, L, and N.

In the table, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management. Guidelines for determining the limitations are available at the local office of the Natural Resources Conservation Service.

Erosion hazard is the probability that damage will occur as a result of site preparation and cutting where the soil is exposed along roads, skid trails, and fire lanes and in log-handling areas. Forests that have been burned or overgrazed also are subject to erosion. Ratings of the erosion hazard are based on the percent of the slope. A rating of *slight* indicates that no particular prevention measures are needed under ordinary conditions. A rating of *moderate* indicates that erosion-control measures are needed in certain silvicultural activities. A rating of *severe* indicates that special precautions are needed to control erosion in most silvicultural activities.

Equipment limitation reflects the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. The chief characteristics and conditions considered in the ratings are slope, stones on the surface, rock outcrops, soil wetness, and texture of the surface layer. A rating of *slight* indicates that under normal conditions the kind of equipment and season of use are not significantly restricted by soil factors. Soil wetness can restrict equipment use, but the wet period does not exceed 1 month. A rating of *moderate* indicates that equipment use is moderately restricted because of one or more soil factors. If the soil is wet, the wetness restricts equipment use for a period of 1 to 3 months. A rating of *severe* indicates that equipment use is severely restricted either as to the kind of equipment that can be used or the season of use. If the soil is wet, the wetness restricts equipment use for more than 3 months.

Seedling mortality refers to the death of naturally occurring or planted tree seedlings, as influenced by the kinds of soil, soil wetness, or topographic conditions. The factors used in rating the soils for seedling mortality are texture of the surface layer, depth to a seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, effective rooting depth, and slope aspect. A rating of *slight* indicates that seedling mortality is not likely to be a problem under normal conditions. Expected mortality is less than 25 percent. A rating of *moderate* indicates that some problems from seedling mortality can be expected. Extra precautions are advisable. Expected mortality is 25 to 50 percent. A rating of *severe* indicates that seedling mortality is a serious problem. Extra precautions are important. Replanting may be necessary. Expected mortality is more than 50 percent.

Windthrow hazard is the likelihood that trees will be uprooted by the wind because the soil is not deep enough for adequate root anchorage. The main restrictions that affect rooting are a seasonal high water table and the depth to bedrock, a fragipan, or other limiting layers. A rating of *slight* indicates that under normal conditions no trees are blown down by the wind. Strong winds may damage trees, but they do not uproot them. A rating of *moderate* indicates that some trees can be blown down during periods when the soil is wet and winds are moderate or strong. A rating of *severe* indicates that many trees can be blown down during these periods.

Plant competition ratings indicate the degree to which undesirable species are expected to invade and grow when openings are made in the tree canopy. The main factors that affect plant competition are depth to the water table and the available water capacity. A rating of *slight* indicates that competition from

undesirable plants is not likely to prevent natural regeneration or suppress the more desirable species. Planted seedlings can become established without undue competition. A rating of *moderate* indicates that competition may delay the establishment of desirable species. Competition may hamper stand development, but it will not prevent the eventual development of fully stocked stands. A rating of *severe* indicates that competition can be expected to prevent regeneration unless precautionary measures are applied.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index* and as a *productivity class*. The site index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. For ponderosa pine, a 100-year site index curve was used *(11)*. For Engelmann spruce, grand fir, Douglas fir, and western larch, a 50-year site index curve was used *(1, 7, 14)*. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

The *productivity class*, a number, is the yield likely to be produced by the most important trees. This number, expressed as cubic meters per hectare per year, indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand. It is calculated at the culmination of the mean annual increment.

The first species listed under *common trees* for a soil is the indicator species for that soil. It generally is the most common species on the soil and is the one that determines the ordination class.

Trees to plant are those that are suitable for commercial wood production.

Windbreaks and Environmental Plantings

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Table 9 shows the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates in the table are based on measurements and observation of established plantings that have been given adequate care. They can be used as a guide in planning windbreaks and screens. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery.

Recreation

The survey area provides many opportunities for outdoor recreation. The most popular activities for both local residents and tourists are centered on the rivers that surround the area.

The annual fall and winter run of steelhead up the Snake, Salmon, and Clearwater Rivers draws anglers from throughout the region. Fishing for smallmouth bass, catfish, and sturgeon in the Snake River is also popular. Rainbow trout are in the small lakes in the area.

Scenic boat tours up the Snake River are becoming an increasingly popular attraction for tourists. A favorite destination is the Hells Canyon National Recreation Area, located along the Snake River, about 35 miles upstream from Lewiston. This stretch of the Snake River has been designated as a Federal wild and scenic area. This remote area features whitewater rapids, rocky gorges, and spectacular rugged canyons. Lewiston and nearby Clarkston, Washington, are the most common points of departure for the river trips.

River rafting is a popular activity along the upper Snake River and the Salmon River, where whitewater rapids are numerous. The less turbulent parts of the rivers are also popular with boaters. Construction of the Lower Granite Dam in 1975 impounded water upstream on the Snake and Clearwater Rivers to points just above Lewiston. The slackwater is a favorite spot for swimming, boating, and water-skiing.

There are a variety of hunting opportunities throughout the area. The grasslands of the rocky canyons provide excellent opportunities for hunting of chukar and Hungarian partridge. Pheasant hunting is popular on the farmland and in canyons at the lower

elevations. Hunting of big game, such as deer and elk, is popular in the canyons and forested areas.

The headquarters of the Nez Perce National Historical Park is at Spalding. It features exhibits and programs that describe the history and culture of the Nez Perce Indians.

Two State parks are in the survey area. Hellsgate Park is along the Snake River, just outside of Lewiston. It features camping, picnicking, and water sports. Winchester Lake State Park is near Winchester, in Lewis County. In addition to camping and picnicking, it offers opportunities for fishing, hiking, and winter sports in a forested setting.

Snowmobiling is a common winter sport at the higher elevations, generally in areas from Waha across Craig Mountain and eastward into Lewis County.

The soils of the survey area are rated in table 10 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In the table, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these.

The information in table 10 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

By Frank J. Fink, Jr., biologist, Natural Resources Conservation Service.

This section relates the general soil map units in this survey to the expected occurrence of certain wildlife species. Wildlife in an area typically is related to the vegetation that is present. The vegetation is closely related to the soil and its capability to produce herbaceous and woody vegetation.

The survey area supports a variety of game and nongame wildlife species. The varied topography, soils, and rainfall coupled with the many different land uses produce a wide variety of habitats for the numerous wildlife species in the area.

Big game in the survey area include elk, white-tailed deer, mule deer, mountain lion, bear, and bighorn sheep. Approximately 825 elk inhabit the area. Summer range for the elk is in the south and south-central parts of the survey area, in general soil map units 6, 7, 8, 9, 11, 12, and 13. Most of the winter range for elk is along the breaks of the Snake and Salmon Rivers, in general soil map units 10 and 11.

White-tailed deer occupy the areas along the valleys and river systems that support dense vegetation. White-tailed deer comprise approximately half of the total deer population, which is estimated at 7,300 head. White-tailed deer are throughout the area, with the highest concentrations in general soil map units 10, 11, and 12.

Mule deer occupy the river breaks and areas of agricultural land and commercial timber land. Logged or burned areas of forest land, which support willows, ceanothus, syringa, and ninebark, provide good habitat for mule deer. Competition with white-tailed deer may limit the population of mule deer.

Mule deer share with elk the summer range in general soil map units 6, 7, 8, 9, 11, 12, and 13. Winter range for mule deer and white-tailed deer typically is in river breaks and canyons along the Snake, Salmon, and Clearwater Rivers and is associated with general soil map units 10 and 11. The 24,000-acre Craig Mountain Wildlife Management Area, which is in the western part of the survey area, was acquired as habitat for mule deer to improve their winter range and increase populations.

Bighorn sheep are along the Snake River Canyon, in the vicinity of Captain John Creek, in general soil map units 10 and 11.

Upland birds associated with the agricultural areas include pheasants, gray partridge, and California quail. These areas are associated with general soil map units 1, 2, 3, 4, 5, 6, and 7. Pheasant populations are low because of a lack of adequate undisturbed nesting cover, winter cover, and food in winter.

Ruffed grouse, blue grouse, and turkey are associated with areas of timber land. These areas are in general soil map units 6, 8, 9, 12, and 13. Blue grouse move to higher elevations in winter, but their nesting habitat is usually at lower elevations on more open, grassy or brush-covered slopes and ridges. Ruffed grouse spend the summer in open clearings in wooded areas and then winter in areas that support conifers. Turkey generally are associated with open ponderosa pine/Douglas fir habitat along major drainageways. Chukar and sharp-tailed grouse are in river breaks and prairies. These areas typically are associated with general soil map units 10 and 11. Native populations of sharp-tailed grouse formerly occupied areas in the northwestern part of the survey area, but the range was eliminated as a result of grazing practices and a change in land use to agricultural production. Sharp-tailed grouse recently were reintroduced to the area.

Furbearers, such as otter, beaver, mink, raccoon, and muskrat, live in and around the creeks and streams in the survey area. The major riparian areas are in general soil map units 1, 10, 11, and 12. Small creeks throughout the survey area extend up into the foothills and mountains and provide additional riparian habitat for these furbearers. Coyote and red fox, which are rare, occur throughout the area and are assumed to occupy areas in all of the general soil map units. Bobcat occupy areas of timber land associated with general soil map units 6, 8, 9, 12, and 13.

Waterfowl concentrate along the streams and rivers in the area. The Lewiston Wildlife Sanctuary on the Clearwater River is managed for geese and as a wintering area for waterfowl. Approximately 500 geese winter in the sanctuary. Small farm ponds can provide isolated habitat for waterfowl if livestock are excluded. Typical waterfowl in the area include geese, teal, and wood duck. The streams, rivers, and larger riparian areas that provide habitat for waterfowl are associated with general soil map units 1, 10, and 11. Smaller riparian zones in all of the general soil map units also provide limited habitat for waterfowl.

Raptors occur throughout the area. Osprey, bald eagle, and peregrine falcon occupy the lower Clearwater and Snake River areas. Osprey nest in these areas, and bald eagle winter along these rivers.

Golden eagle, prairie falcon, red-tailed hawk, Swainson's hawk, Cooper's hawk, sharp-shinned hawk, and American kestrel occur throughout the area in all of the general soil map units.

Both anadromous and resident salmon and trout use the rivers, streams, and creeks in the survey area. Steelhead use Lawyers, Big Canyon, Cottonwood, Jacks, and Captain John Creeks for spawning. Both steelhead and salmon use the Clearwater, Snake, and Salmon Rivers for passage or, in some cases, for spawning and rearing. Resident populations of rainbow trout, brook trout, and brown trout live in small perennial streams and creeks throughout the area. The major tributaries and fisheries in the survey area are associated with general soil map units 1, 10, 11, and 12.

Wildlife populations are largely determined by the suitability of the habitat, which includes the supply of food, the amount of cover, and the availability of water. Habitats differ in their capacity to provide these

essential needs. Some of the deficiencies are a result of the characteristics of the soils, and others are a result of management. To improve the habitat for wildlife, good management practices are needed. Wildlife habitat should be considered when managing the soils for other uses.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kinds of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, or other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm

dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

The table also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

The table gives ratings for the natural soil that makes up the lagoon floor. The surface layer and,

generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of groundwater pollution. Ease of excavation and revegetation should be considered.

The ratings in the table are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of

15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In the table, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment

can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts and sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as about 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(4, 13)* and the system adopted by the American Association of State Highway and Transportation Officials *(3, 13)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3-bar moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect retention of water and depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, content of rock fragments, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on the basis of measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, more than 6 percent; and *very high*, greater than 9 percent.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.64. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are as follows:

1. Coarse sands, sands, fine sands, and very fine sands.
2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material.
3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay.
5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material.
6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay.
7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material.
8. Soils that are not subject to wind erosion because of coarse fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In the table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Tables 17 and 18 give estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

In table 17, *hydrologic soil groups* are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered

flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

The table gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 days to 1 month, and *very long* if more than 1 month. Probable dates are expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in the table are depth to the seasonal high water table, the kind of water table, and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in the table.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

In table 18, *depth to bedrock* is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

A *cemented pan* is a cemented or indurated subsurface layer within a depth of 5 feet. Such a pan causes difficulty in excavation. Pans are classified as thin or thick. A thin pan is less than 3 inches thick if continuously indurated or less than 18 inches thick if discontinuous or fractured. Excavations can be made by trenching machines, backhoes, or small rippers. A thick pan is more than 3 inches thick if continuously indurated or more than 18 inches thick if discontinuous or fractured. Such a pan is so thick or massive that blasting or special equipment is needed in excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more

susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(19)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Mollisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Xeroll (*Xer*, meaning dry, plus *oll*, from Mollisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; type of saturation; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Argixerolls (*Argi*, meaning a zone of clay accumulation, plus *xeroll*, the suborder of the Mollisols that has a xeric moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic subgroup is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other taxonomic class. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Argixerolls.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle size, mineral content, soil temperature regime, soil depth, and reaction. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-silty, mixed, mesic Typic Argixerolls.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. An example is the Uhlorn series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" *(17)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(19)* and in "Keys to Soil Taxonomy" *(23)*. Unless otherwise indicated, colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Agatha Series

Taxonomic class: Loamy-skeletal, mixed, frigid Vitrandic Haploxeralfs

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills, canyonsides

Parent material: Basalt colluvium mixed with loess in the upper part
Slope range: 15 to 75 percent
Elevation: 1,200 to 5,000 feet
Climatic data (average annual):
Precipitation—24 to 28 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—65 to 110 days

Typical Pedon Description

Oi—1 inch to 0; needles, twigs, and moss.
A—0 to 5 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 5 percent gravel and cobbles; slightly acid (pH 6.2); clear wavy boundary.
AB—5 to 15 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate fine granular; slightly hard, very friable, slightly sticky and nonplastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 8 percent cobbles and 2 percent gravel; moderately acid (pH 5.8); clear irregular boundary.
Bt1—15 to 23 inches; brown (7.5YR 5/4) cobbly clay loam, brown (7.5YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; common very fine tubular pores; 15 percent cobbles and 10 percent gravel; common faint patchy clay films on faces of peds and lining pores; moderately acid (pH 5.6); gradual irregular boundary.
Bt2—23 to 33 inches; light brown (7.5YR 6/4) very cobbly clay loam, brown (7.5YR 4/4) moist; dominantly moderate fine and medium subangular blocky structure, but moderate very fine angular blocky structure in some areas; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots and few medium roots; few very fine tubular pores; 35 percent cobbles and 20 percent gravel; common faint patchy clay films on faces of peds and lining pores; moderately acid (pH 6.0); gradual irregular boundary.
Bt3—33 to 47 inches; light brown (7.5YR 6/4) extremely cobbly loam, brown (7.5YR 5/4) moist; moderate very fine angular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common very fine and fine roots; common very fine tubular pores; 50 percent cobbles and 30 percent gravel; few faint patchy clay films lining pores; slightly acid (pH 6.2); clear irregular boundary.
R—47 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Agatha loam, 40 to 75 percent slopes
Location in survey area: About 4 miles southwest of Winchester, in Lewis County; about 1,100 feet south and 1,000 feet west of the northeast corner of sec. 9, T. 33 N., R. 3 W.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Average annual soil temperature—43 to 45 degrees F

Upper 7 to 14 inches:
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.0 percent

Particle-size control section (weighted average):
Clay content—24 to 32 percent
Coarse fragment content—35 to 70 percent

A horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

Bt1 horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—cobbly clay loam, gravelly silt loam, gravelly loam, very cobbly clay loam, or very gravelly silt loam
Rock fragment content—25 to 60 percent
Clay content—18 to 30 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

Bt2 and Bt3 horizons:
Hue—7.5YR or 10YR
Value—4 or 5 moist
Texture—very cobbly clay loam, extremely cobbly clay loam, or extremely cobbly loam
Rock fragment content—45 to 85 percent
Clay content—24 to 35 percent
Reaction—moderately acid or slightly acid

Ahsahka Series

Taxonomic class: Fine-loamy, mixed, mesic Typic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills
Parent material: Material weathered from granite
Slope range: 15 to 40 percent
Elevation: 1,300 to 1,850 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—48 to 50 degrees F
Frost-free period—120 to 160 days

Typical Pedon Description

Oi—0.5 inch to 0; undecomposed needles, leaves, and twigs.

A1—0 to 4 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; weak fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium and coarse roots; many very fine irregular and tubular pores; slightly acid (pH 6.4); clear wavy boundary.

A2—4 to 11 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and common coarse roots; many very fine irregular pores and common very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine irregular and tubular pores; many faint clay films on faces of peds and lining pores and common distinct clay films lining pores; neutral (pH 6.9); abrupt wavy boundary.

Bt2—17 to 32 inches; yellowish brown (10YR 5/4) loam, dark brown (7.5YR 3/2) moist; moderate fine prismatic structure parting to strong fine and medium angular blocky; hard, firm, sticky and plastic; common very fine and fine roots; many very fine irregular and tubular pores; many distinct clay films on faces of peds and lining pores; 10 percent gravel; many faint coatings of silt on faces of peds; neutral (pH 6.9); abrupt smooth boundary.

2Bt3—32 to 52 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; strong coarse prismatic structure; very hard, very firm, very sticky and very plastic; many very fine and fine roots; common very fine irregular and tubular pores; 10 percent gravel; common distinct capping of silt on top of peds; cracks 1/4 to 1/2 inch wide between prisms; few slickensides on faces of prisms; neutral (pH 6.9); clear wavy boundary.

2Bt4—52 to 60 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; moderate coarse and medium prismatic structure; hard, firm, very sticky and very plastic; few very fine and fine roots; common very fine tubular pores and few very fine irregular pores; few slickensides on faces of peds; 10 percent gravel; neutral (pH 7.1).

Typical Pedon Location

Location in adjacent survey area: About 0.5 mile north of Orofino, in Clearwater County; about 800 feet north and 1,825 feet east of the southwest corner of sec. 6, T. 36 N., R. 2 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches (less than 1 percent organic matter below a depth of 20 inches)
Average annual soil temperature—50 to 52 degrees F

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR or 7.5YR
Value—3 to 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—loam, silt loam, silty clay loam, or clay loam
Clay content—18 to 30 percent
Coarse fragment content—2 to 15 percent
Reaction—moderately acid to neutral

2Bt horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry
Chroma—2 to 6 dry or moist
Texture—clay, silty clay loam, or clay loam
Clay content—32 to 50 percent

Coarse fragment content—2 to 15 percent
Reaction—slightly acid or neutral

Almota Series

Taxonomic class: Fine-loamy, mixed, mesic Calcic Haploxerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus, canyonsides
Parent material: Loess, colluvium derived from basalt
Slope range: 5 to 65 percent
Elevation: 1,500 to 2,700 feet
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—49 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

Typical Pedon Description

A1—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.
A2—8 to 17 inches; dark brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.2); clear wavy boundary.
Bw—17 to 24 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores; 12 percent gravel; mildly alkaline (pH 7.8); clear smooth boundary.
Bk—24 to 35 inches; pale brown (10YR 6/3) gravelly silt loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common fine and medium tubular pores; slightly effervescent; 20 percent gravel; moderately alkaline (pH 8.2); abrupt smooth boundary.
Ck—35 to 39 inches; pale brown (10YR 6/3) very gravelly silt loam, brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common fine and medium tubular pores; strongly effervescent; 40 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.
2R—39 inches; basalt coated with calcium carbonate.

Typical Pedon Location

Map unit in which located: Almota-Linville complex, 30 to 50 percent slopes
Location in survey area: About 2 miles north of Lewiston, in Nez Perce County; about 1,900 feet south and 110 feet east of the northwest corner of sec. 19, T. 36 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 20 inches
Depth to bedrock—30 to 40 inches
Average annual soil temperature—51 to 52 degrees F

Particle-size control section (weighted average):
Clay content—18 to 22 percent
Coarse fragment content—10 to 20 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Gravel content—5 to 15 percent
Clay content—18 to 22 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—6 or 7 dry, 4 or 5 moist
Gravel content—15 to 25 percent
Clay content—18 to 22 percent

Ck horizon:
Texture—gravelly silt loam or very gravelly silt loam
Gravel content—20 to 40 percent

Alpowa Series

Taxonomic class: Loamy-skeletal, mixed, mesic Calcic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus, canyonsides
Parent material: Loess, material weathered from basalt
Slope range: 15 to 75 percent

Elevation: 800 to 2,500 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—135 to 180 days

Typical Pedon Description

A—0 to 8 inches; dark grayish brown (10YR 4/2) cobbly silt loam, very dark brown (10YR 2/2) moist; strong medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 15 percent cobbles and 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.

AB—8 to 13 inches; brown (10YR 5/3) very cobbly silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; slightly effervescent; disseminated lime; 30 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

Bk1—13 to 25 inches; brown (10YR 5/3) very cobbly silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; violently effervescent; disseminated lime; 40 percent cobbles and 10 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

Bk2—25 to 30 inches; pale brown (10YR 6/3) very cobbly silt loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and common fine tubular pores; violently effervescent; disseminated lime and common fine soft masses of lime; 40 percent cobbles and 10 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.

Bk3—30 to 44 inches; very pale brown (10YR 7/3) very cobbly silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; strongly effervescent; disseminated lime; 3 percent stones, 45 percent cobbles, and 10 percent gravel; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk4—44 to 60 inches; very pale brown (10YR 7/3) very cobbly silt loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and slightly plastic; few very fine and fine roots; few very fine tubular pores; violently effervescent; disseminated lime; 3 percent stones, 45 percent cobbles, and 10 percent gravel; strongly alkaline (pH 9.0).

Typical Pedon Location

Map unit in which located: Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes
Location in survey area: About 2 miles south of Lewiston Orchards, in Nez Perce County; about 2,050 feet south and 2,490 feet west of the northeast corner of sec. 35, T. 35 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 15 inches
Average annual soil temperature—49 to 52 degrees F

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Rock fragment content—35 to 50 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—cobbly silt loam or silt loam

Bk horizon:
Value—5 to 7 dry, 3 to 5 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly silt loam, very gravelly silt loam, very cobbly loam, or very gravelly loam
Clay content—10 to 18 percent
Rock fragment content—35 to 60 percent
Reaction—mildly alkaline to strongly alkaline

Aquents

Taxonomic class: Aquents

Depth class: Very deep
Drainage class: Poorly drained
Permeability: Rapid or very rapid
Landform: Flood plains
Parent material: Alluvium derived from mixed sources
Slope range: 0 to 3 percent
Elevation: 740 to 1,200 feet
Climatic data (average annual):
Precipitation—12 to 24 inches
Air temperature—50 to 53 degrees F
Frost-free season (32 degrees F)—160 to 180 days

Representative Pedon Description

A—0 to 2 inches; brown (10YR 5/3) very cobbly very fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate thin platy structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; 5 percent gravel and 50 percent cobbles; slightly acid (pH 6.4); abrupt wavy boundary.

2C1—2 to 8 inches; light brownish gray (10YR 6/2) extremely cobbly loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many fine and very fine roots; many fine and very fine irregular pores; 35 percent gravel and 40 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

2C2—8 to 25 inches; brown (10YR 5/3) extremely cobbly sand, brown (10YR 4/3) moist; common medium distinct mottles that are dark yellowish brown (10YR 4/4) when moist; single grain; loose, nonsticky and nonplastic; common fine and very fine roots; many fine and very fine irregular pores; 30 percent gravel and 40 percent cobbles; thin subhorizon of fine gravel at base of horizon; neutral (pH 6.8); clear wavy boundary.

2C3—25 to 60 inches; yellowish brown (10YR 5/4) extremely cobbly loamy sand, dark yellowish brown (10YR 4/4) moist; few coarse distinct mottles that are dark grayish brown (10YR 4/2) when moist; single grain; loose, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 6.8).

Representative Pedon Location

Map unit in which located: Riverwash-Aquents complex, nearly level

Location in survey area: About 5 miles east of Lewiston, in Nez Perce County; about 1,450 feet south and 500 feet west of the northeast corner of sec. 25, T. 36 N., R. 5 W.

Range in Characteristics

Profile:

Depth to seasonal high water table—6 to 24 inches in November through July

Average annual soil temperature—52 to 55 degrees F

Frequency of flooding—frequent for long periods in December through June

Particle-size control section (weighted average):

Clay content—0 to 12 percent

Coarse fragment content—25 to 70 percent

A horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 or 3 dry or moist

Reaction—slightly acid or neutral

2C horizon:

Value—5 or 6 dry, 3 or 4 moist

Chroma—2 to 4 dry or moist

Texture—sandy loam, loamy sand, or sand that is gravelly to extremely gravelly or cobbly to extremely cobbly

Coarse fragment content—20 to 85 percent

Clay content—0 to 20 percent

Reaction—slightly acid or neutral

Aquolls

Taxonomic class: Aquolls

Depth class: Deep or very deep

Drainage class: Poorly drained

Permeability: Moderately slow

Landform: Flood plains, drainageways

Parent material: Alluvium

Slope range: 0 to 3 percent

Elevation: 4,000 to 5,200 feet

Climatic data (average annual):

Precipitation—26 to 28 inches

Air temperature—41 to 43 degrees F

Frost-free season (32 degrees F)—60 to 80 days

Representative Pedon Description

A1—0 to 3 inches; very dark gray (10YR 3/1) silt loam, black (10YR 2/1) moist; moderate medium granular structure; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.6); abrupt smooth boundary.

A2—3 to 10 inches; dark gray (10YR 4/1) silty clay loam, black (10YR 2/1) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and very plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.6); abrupt smooth boundary.

E—10 to 13 inches; very pale brown (10YR 7/3) silt loam, dark grayish brown (10YR 4/2) moist; common fine prominent strong brown (7.5YR 4/6) mottles; moderate fine and medium subangular blocky structure; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; few wormcasts and krotovinas of A horizon material; moderately acid (pH 5.8); abrupt smooth boundary.

Eg—13 to 18 inches; light gray (10YR 7/1) silt loam, grayish brown (2.5Y 5/2) moist; common fine and few medium prominent strong brown (7.5YR 4/6) mottles; massive; slightly hard, friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; moderately acid (pH 6.0); clear smooth boundary.

Btgb1—18 to 26 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; many fine and few medium prominent strong brown (7.5YR 4/6) mottles; moderate medium prismatic structure; hard, friable, slightly sticky and plastic; common very fine roots; few fine and very fine tubular pores; few distinct patchy clay films on faces of peds and in pores; common fine black (2.5Y 2/0) coatings of manganese; common grayish brown (2.5Y 5/2) skeletans on faces of peds; slightly acid (pH 6.2); gradual wavy boundary.

Btgb2—26 to 38 inches; light gray (2.5Y 7/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; many fine prominent strong brown (7.5YR 4/6) mottles and few fine prominent greenish gray (5BG 5/1) mottles; moderate coarse subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; few fine and very fine tubular pores; few distinct patchy clay films on faces of peds and in pores; many fine and medium black (2.5Y 2/0) coatings of manganese; slightly acid (pH 6.2); gradual wavy boundary.

2BCg—38 to 42 inches; light gray (2.5Y 7/2) extremely gravelly clay loam, dark grayish brown (2.5Y 4/2) moist; many medium and coarse prominent strong brown (7.5YR 4/6) mottles and common fine prominent greenish gray (5BG 5/1) mottles; few very fine roots; few fine and very fine tubular pores; weak medium subangular blocky structure; hard, friable, sticky and plastic; 40 percent gravel and 30 percent cobbles; slightly acid (pH 6.2); clear wavy boundary.

2R—42 inches; fractured basalt.

Representative Pedon Location

Map unit in which located: Aquolls, nearly level

Location in survey area: About 3 miles east of Soldiers Meadow Reservoir, in Lewis County; about 100 feet south and 200 feet west of the northeast corner of sec. 3, T. 32 N., R. 3 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon—10 to 24 inches

Depth to apparent seasonal water table—6 inches above the surface (ponded) to 18 inches below the surface in March through June

Depth to bedrock—more than 40 inches

Average annual soil temperature—43 to 45 degrees F

Average summer soil temperature—57 to 61 degrees F

Frequency of flooding—occasional for brief periods in March through June

An Ab horizon is in some pedons.

Particle-size control section (weighted average):

Clay content—24 to 40 percent

Coarse fragment content—0 to 30 percent

A horizon:

Value—3 or 4 dry

E and Eg horizons (absent in some pedons):

Hue—2.5Y or 10YR

Value—6 to 8 dry, 4 or 5 moist

Chroma—1 to 3 dry

Clay content—10 to 24 percent

Reaction—moderately acid or slightly acid

Btgb horizon:

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Texture—silty clay loam, silt loam, gravelly clay loam, or silty clay

Gravel content—0 to 35 percent

Clay content—20 to 45 percent

Reaction—moderately acid or slightly acid

2BCg horizon (absent in some pedons):

Hue—2.5Y or 10YR

Value—6 or 7 dry, 4 or 5 moist

Texture—extremely gravelly clay loam, extremely gravelly loam, very gravelly clay loam, or very gravelly loam

Coarse fragment content—35 to 80 percent

Clay content—20 to 40 percent

Reaction—moderately acid or slightly acid

Athena Series

Taxonomic class: Fine-silty, mixed, mesic Pachic Haploxerolls

Depth class: Very deep

Drainage class: Well drained

Permeability: Moderate

Landform: Hills on plateaus, canyonsides

Parent material: Loess

Slope range: 2 to 65 percent

Elevation: 1,500 to 2,900 feet

Climatic data (average annual):
Precipitation—17 to 22 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—130 to 180 days

Typical Pedon Description

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak very fine granular structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine irregular pores; neutral (pH 6.8); abrupt smooth boundary.

A—9 to 14 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak very fine and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores and common very fine and fine tubular pores; neutral (pH 7.0); gradual smooth boundary.

AB—14 to 21 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium roots; many very fine and fine irregular pores and common very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Bw1—21 to 29 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few fine tubular pores; neutral (pH 6.8); gradual smooth boundary.

Bw2—29 to 44 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few fine tubular pores; neutral (pH 7.2); clear smooth boundary.

Bk1—44 to 52 inches; very pale brown (10YR 7/4) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common very fine and fine tubular pores; violently effervescent; mildly alkaline (pH 7.8); clear smooth boundary.

Bk2—52 to 64 inches; very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; violently effervescent; moderately alkaline (pH 8.0).

Typical Pedon Location

Map unit in which located: Palouse-Athena complex, 2 to 8 percent slopes
Location in survey area: About 5 miles southwest of Genesee, in Nez Perce County; about 2,000 feet south and 2,000 feet west of the northeast corner of sec. 12, T. 36 N., R. 6 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Depth to secondary carbonates—43 to 60 inches
Average annual soil temperature—50 to 54 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

Bw horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—18 to 25 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Hue—10YR or 2.5Y
Value—5 to 7 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Bakeoven Series

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haploxerolls

Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides
Parent material: Loess, residuum derived from basalt
Slope range: 10 to 35 percent
Elevation: 1,000 to 2,400 feet
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—150 to 165 days

Typical Pedon Description

A—0 to 3 inches; dark grayish brown (10YR 4/2) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores; 20 percent gravel, 5 percent cobbles, and 30 percent stones; neutral (pH 6.8); clear wavy boundary.

Bw—3 to 6 inches; brown (10YR 4/3) very gravelly clay loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots; common very fine irregular pores; 40 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.

R—6 inches; basalt.

Typical Pedon Location

Map unit in which located: Bakeoven-Watama complex, 10 to 35 percent slopes

Location in survey area: About 2 miles north of Lewiston, in Nez Perce County; about 1,800 feet south and 2,400 feet west of the northeast corner of sec. 20, T. 36 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—4 to 10 inches
Depth to bedrock—4 to 10 inches
Average annual soil temperature—52 to 54 degrees F

Particle-size control section (weighted average):
Clay content—18 to 33 percent
Rock fragment content—40 to 60 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 moist

Bw horizon:
Value—4 or 5 dry
Texture—very gravelly clay loam or very gravelly loam
Rock fragment content—40 to 60 percent
Clay content—18 to 33 percent
Reaction—neutral or mildly alkaline

Bluesprin Series

Taxonomic class: Loamy-skeletal, mixed, mesic Ultic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess over material weathered from basalt
Slope range: 10 to 35 percent
Elevation: 2,300 to 3,800 feet
Climatic data (average annual):
Precipitation—20 to 25 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

Typical Pedon Description

Ap1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; less than 5 percent gravel; moderately acid (pH 5.8); clear smooth boundary.

Ap2—6 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few fine and very fine roots; common very fine and few fine tubular pores; less than 5 percent gravel; slightly acid (pH 6.3); gradual smooth boundary.

AB—9 to 14 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few fine and very fine roots; common fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

2Bt1—14 to 22 inches; brown (10YR 5/3) and yellowish brown (10YR 5/4) very gravelly silty clay loam, dark brown (10YR 3/3) and dark yellowish brown (10YR 3/4) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few very fine roots; common fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; 20 percent cobbles and 30 percent gravel; slightly acid (pH 6.5); clear wavy boundary.

2Bt2—22 to 28 inches; yellowish brown (10YR 5/4) extremely gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and plastic; few very fine roots; common fine and very fine tubular pores; common faint and few distinct discontinuous clay films on faces of peds and in pores; common fine iron concretions;

few distinct strong brown (7.5YR 4/6) iron stains; 30 percent cobbles and 35 percent gravel; neutral (pH 6.8); clear wavy boundary.
2R—28 inches; basalt.

Typical Pedon Location

Map unit in which located: Southwick-Bluesprin complex, 10 to 35 percent slopes
Location in survey area: About 1 mile north of Gifford, in Nez Perce County; about 800 feet south and 450 feet west of the northeast corner of sec. 22, T. 36 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 18 inches
Base saturation—60 to 75 percent in some part between 10 and 30 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—27 to 34 percent
Coarse fragment content—50 to 80 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

2Bt horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly silty clay loam, very gravelly silt loam, extremely gravelly silty clay loam, or extremely gravelly clay loam
Coarse fragment content—40 to 85 percent
Clay content—25 to 34 percent
Reaction—slightly acid or neutral

Boles Series

Taxonomic class: Fine, montmorillonitic, frigid Xeric Argialbolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 1 to 6 percent
Elevation: 4,000 to 4,500 feet
Climatic data (average annual):
Precipitation—22 to 25 inches
Air temperature—43 to 44 degrees F
Frost-free season (32 degrees F)—80 to 100 days

Typical Pedon Description

Oi—1 inch to 0; undecomposed and partially decomposed needles, leaves, twigs, cones, and bark.
A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; strong fine and medium granular structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; strongly acid (pH 5.4); gradual smooth boundary.
A2—4 to 10 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many very fine, fine, and medium roots; many very fine and fine tubular pores; strongly acid (pH 5.4); gradual wavy boundary.
AB—10 to 13 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine, fine, and medium tubular pores; slightly acid (pH 6.1); gradual wavy boundary.
E1—13 to 15 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak medium and coarse subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); clear smooth boundary.
E2—15 to 17 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; moderate medium and thin platy structure; soft, very friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); abrupt smooth boundary.
Btb1—17 to 21 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots, some flattened against faces of peds; common very fine and fine tubular pores; nearly continuous slickensides; few faint clay films on faces of peds and in pores; many prominent continuous skeletans capping tops of prisms; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); clear wavy boundary.

Btb2—21 to 45 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; strong medium and coarse angular blocky structure; very hard, very firm, very sticky and very plastic; few very fine and fine roots, some flattened against faces of peds; few very fine and fine tubular pores; nearly continuous slickensides; few faint clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 6.6); abrupt smooth boundary.

Btkb—45 to 70 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; many very fine and fine tubular pores; many prominent clay films on faces of peds and in pores; strongly effervescent; common fine soft masses of lime; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Boles-Joel complex, 1 to 8 percent slopes

Location in survey area: About 2 miles south of Mason Butte, in Lewis County; about 600 feet south and 2,650 feet east of the northwest corner of sec. 34, T. 33 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 18 inches
Organic matter content in mollic epipedon (weighted average)—3 to 6 percent
Depth to seasonal perched water table—10 to 18 inches in February through April
Depth to argillic horizon—14 to 22 inches
Depth to secondary carbonates—40 to 60 inches or more
Average annual soil temperature—45 to 46 degrees F

Particle-size control section (weighted average):
Clay content—40 to 52 percent

A horizon:
Value—3 or 4 dry
Chroma—1 or 2 dry or moist
Reaction—strongly acid to slightly acid

E horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—1 or 2 dry or moist
Clay content—14 to 20 percent

Btb horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silty clay or clay
Clay content—40 to 52 percent
Reaction—slightly acid or neutral

Btkb horizon (absent in some pedons):
Value—4 to 6 dry, 3 or 4 moist
Texture—silty clay loam, silty clay, or clay
Clay content—36 to 50 percent
Calcium carbonate equivalent—5 to 20 percent
Reaction—neutral or mildly alkaline

Bridgewater Series

Taxonomic class: Loamy-skeletal, mixed, mesic Cumulic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the lower part
Landform: Stream terraces
Parent material: Gravelly alluvium derived dominantly from basalt
Slope range: 1 to 4 percent
Elevation: 750 to 2,300 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—50 to 54 degrees F
Frost-free season (32 degrees F)—160 to 190 days

Typical Pedon Description

A1—0 to 16 inches; dark brown (10YR 4/3) extremely gravelly sandy loam, very dark brown (10YR 2/2) moist; weak fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; few fine and very fine tubular pores; 50 percent gravel and 25 percent cobbles; neutral (pH 7.2); clear smooth boundary.

A2—16 to 22 inches; brown (10YR 4/3) extremely gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many medium, fine, and very fine roots; few very fine tubular pores; slightly effervescent; disseminated lime throughout; 40 percent gravel and 20 percent cobbles; fine stratification of color and texture is visible; mildly alkaline (pH 7.6); clear wavy boundary.

AC—22 to 34 inches; brown (10YR 4/3) extremely cobbly sandy loam, very dark brown (10YR 2/2) moist; massive; soft, friable, slightly sticky and nonplastic; many medium, fine, and very fine roots; few very fine irregular pores; 30 percent gravel and 40 percent cobbles; mildly alkaline (pH 7.6); clear wavy boundary.

2C—34 to 60 inches; dark grayish brown (10YR 4/2) extremely gravelly loamy coarse sand, very dark brown (10YR 2/2) moist; single grain; loose, nonsticky and nonplastic; many medium, fine, and very fine roots; many very fine irregular pores; 50 percent gravel and 35 percent cobbles; 2-inch-thick lens of extremely gravelly sandy loam at a depth of 55 inches; mildly alkaline (pH 7.6).

Typical Pedon Location

Map unit in which located: Lapwai-Bridgewater complex, 1 to 4 percent slopes
Location in survey area: About 3 miles southeast of Lapwai, in Nez Perce County; about 1,225 feet north and 1,620 feet east of the southwest corner of sec. 19, T. 35 N., R. 3 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 35 inches
Depth to 2C horizon—30 to 40 inches
Average annual soil temperature—52 to 56 degrees F
Frequency of flooding—rare

Particle-size control section (weighted average):
Clay content—8 to 15 percent
Coarse fragment content—60 to 80 percent

A1 horizon:
Value—3 or 4 dry
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

A2 and AC horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—extremely gravelly loam, extremely gravelly sandy loam, or extremely cobbly sandy loam
Coarse fragment content—60 to 80 percent
Clay content—10 to 22 percent
Reaction—neutral or mildly alkaline

2C horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Texture—extremely gravelly loamy coarse sand, extremely gravelly sand, or extremely cobbly sand
Coarse fragment content—60 to 85 percent
Reaction—neutral or mildly alkaline

Broadax Series

Taxonomic class: Fine-silty, mixed, mesic Calcic Argixerolls
Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 1 to 25 percent
Elevation: 1,500 to 2,900 feet
Climatic data (average annual):
Precipitation—15 to 20 inches
Air temperature—48 to 51 degrees F
Frost-free season (32 degrees F)—140 to 170 days

Typical Pedon Description

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.
Ap2—4 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak thick platy structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine tubular pores; moderately acid (pH 5.9); clear smooth boundary.
BA—9 to 16 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and few fine roots; many very fine and fine tubular pores; worm channels filled with A horizon material; neutral (pH 6.8); clear smooth boundary.
Bt1—16 to 26 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; common very fine and few fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and lining pores; common prominent discontinuous skeletans on faces of peds; few organic stains on faces of peds; mildly alkaline (pH 7.4); clear wavy boundary.
Bt2—26 to 33 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/3) moist; weak fine and medium prismatic structure parting to weak fine and medium subangular blocky; hard, friable, sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular

pores; common faint and few distinct discontinuous clay films on faces of peds and lining pores; krotovinas of A horizon material 4 inches in diameter; much mixing evident in horizon; mildly alkaline (pH 7.6); abrupt wavy boundary.

BC—33 to 37 inches; pale brown (10YR 6/3) silt loam, dark brown (10YR 4/3) moist; weak fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Btkb1—37 to 41 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak fine prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; common faint discontinuous clay films lining pores; violently effervescent; few fine veins of lime, noncalcareous matrix; moderately alkaline (pH 7.9); gradual wavy boundary.

Btkb2—41 to 65 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine and common medium tubular pores; few faint clay films lining pores; violently effervescent; many medium white (10YR 8/2) veins of lime; 9 percent calcium carbonate equivalent; moderately alkaline (pH 8.4).

Typical Pedon Location

Map unit in which located: Broadax-Hatwai complex, 1 to 8 percent slopes

Location in survey area: About 1.5 miles northeast of Mann Lake, in Nez Perce County; about 2,800 feet south and 2,500 feet east of the northwest corner of sec. 15, T. 35 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 20 inches
Depth to secondary carbonates—30 to 43 inches
Average annual soil temperature—50 to 53 degrees F

Ap horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—moderately acid to neutral

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent

BC horizon (absent in some pedons):
Value—4 or 5 moist
Chroma—3 or 4 dry or moist
Reaction—mildly alkaline or moderately alkaline

Btkb horizon:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—15 to 25 percent
Calcium carbonate equivalent—2 to 25 percent
Sodium adsorption ratio—3 to 10
Exchangeable sodium percentage—5 to 15
Reaction—moderately alkaline or strongly alkaline

Bryden Series

Taxonomic class: Fine-silty, mixed, mesic Typic Durixerolls

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderately slow above the duripan
Landform: Hills on plateaus
Parent material: Loess over material weathered from basalt
Slope range: 2 to 12 percent
Elevation: 1,400 to 2,500 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 180 days

Typical Pedon Description

Ap1—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate medium granular; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular pores; slightly acid (pH 6.4); clear smooth boundary.

Ap2—7 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

Bt—10 to 13 inches; dark brown (10YR 4/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; strong fine prismatic structure; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many faint

discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds and lining pores; 9 percent exchangeable sodium; mildly alkaline (pH 7.8); clear wavy boundary.

Btn—13 to 19 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; strong medium prismatic structure; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many distinct discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds and lining pores; sodium adsorption ratio of 10; 15 percent exchangeable sodium; moderately alkaline (pH 8.4); gradual wavy boundary.

Btkn—19 to 25 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; few faint discontinuous clay films on faces of peds; strongly effervescent (5 percent calcium carbonate equivalent); disseminated lime and few very fine soft masses of lime; sodium adsorption ratio of 15; 21 percent exchangeable sodium; strongly alkaline (pH 8.7); clear irregular boundary.

Bkn—25 to 31 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; strongly effervescent (20 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; 3 percent gravel; sodium adsorption ratio of 20; 28 percent exchangeable sodium; strongly alkaline (pH 8.7); clear irregular boundary.

2Bknq—31 to 37 inches; white (10YR 8/2) very gravelly silt loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; violently effervescent (60 percent calcium carbonate equivalent); disseminated lime; 30 percent indurated durinodes and 10 percent basalt gravel; sodium adsorption ratio of 19; 33 percent exchangeable sodium; strongly alkaline (pH 8.8); abrupt wavy boundary.

2Bknqm—37 to 60 inches; white (10YR 8/2) indurated duripan, very pale brown (10YR 7/3) moist; strong very thick platy structure; extremely hard, extremely firm; indurated plates are 1 to 2 inches thick and 4 to 8 inches long; nearly continuous laminar cap; 1-inch-thick lenses of soft, very friable gravelly silt loam between plates; violently effervescent (85 percent calcium carbonate equivalent); disseminated lime; sodium adsorption ratio of 18; 35 percent exchangeable sodium; very strongly alkaline (pH 9.5).

Typical Pedon Location

Map unit in which located: Endicott-Bryden complex, 2 to 6 percent slopes (fig. 22)

Location in survey area: About 3 miles southeast of Lewiston, in Nez Perce County; about 2,550 feet north and 1,600 feet west of the southeast corner of sec. 36, T. 35 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 26 inches
Depth to natric horizon—8 to 18 inches
Depth to secondary carbonates—14 to 22 inches
Depth to duripan—25 to 40 inches
Depth to bedrock—more than 50 inches
Average annual soil temperature—50 to 54 degrees F

Particle-size control section (weighted average):
Clay content—20 to 27 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Reaction—slightly acid to mildly alkaline

Bt horizon, and Btn horizon (absent in some pedons):
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or silty clay loam
Clay content—18 to 30 percent
Sodium adsorption ratio—4 to 20
Exchangeable sodium percentage—8 to 21
Reaction—neutral to moderately alkaline

Btkn and Bkn horizons:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Clay content—18 to 26 percent
Calcium carbonate equivalent—5 to 25 percent
Sodium adsorption ratio—13 to 26
Exchangeable sodium percentage—18 to 30
Reaction—moderately alkaline or strongly alkaline

2Bknq horizon:
Value—7 or 8 dry
Chroma—2 or 3 dry or moist
Texture—very gravelly loam, very gravelly silt loam, gravelly loam, or gravelly silt loam
Coarse fragment content—15 to 45 percent
Calcium carbonate equivalent—50 to 85 percent
Sodium adsorption ratio—15 to 25
Exchangeable sodium percentage—25 to 35
Reaction—strongly alkaline or very strongly alkaline

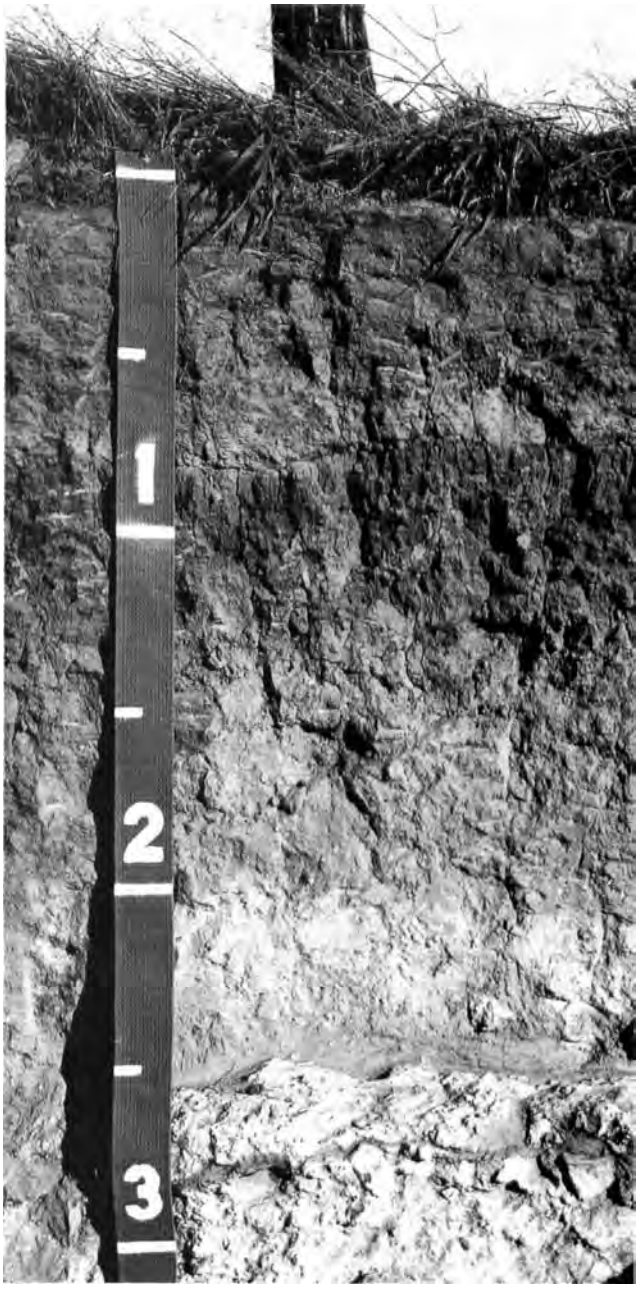


Figure 22.—A profile of Bryden silt loam in an area of Endicott-Bryden complex, 2 to 6 percent slopes. A natric horizon is at a depth of about 9 inches, and an indurated duripan is at a depth of about 30 inches (numerals on tape indicate feet).

Caldwell Series

Taxonomic class: Fine-silty, mixed, mesic Cumulic Haploxerolls

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landform: Flood plains
Parent material: Alluvium
Slope range: 0 to 3 percent
Elevation: 2,570 to 2,780 feet
Climatic data (average annual):
Precipitation—18 to 23 inches
Air temperature—45 to 46 degrees F
Frost-free period—110 to 135 days

Typical Pedon Description

Ap—0 to 9 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak thick platy structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many roots; common fine pores; neutral; abrupt smooth boundary.

A1—9 to 17 inches; dark gray (10YR 4/1) silt loam, black (10YR 2/1) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and slightly plastic; common roots; common fine pores; neutral; clear smooth boundary.

A2—17 to 26 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, slightly firm, sticky and plastic; common roots; many fine pores; faint patchy clay films; some organic stains on peds; gray siliceous coatings on vertical faces of peds; neutral; clear smooth boundary.

Bw—26 to 39 inches; gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots; common fine pores; faint patchy clay films; gray coatings of silt on peds; neutral; abrupt smooth boundary.

Cg1—39 to 54 inches; light brownish gray (2.5Y 6/2) silty clay loam, very dark grayish brown (2.5Y 3/2) moist; many fine distinct yellowish brown (10YR 5/6) and brown (7.5YR 4/4) mottles; massive; hard, firm, sticky and plastic; few roots; few fine pores; few very faint clay films; neutral; abrupt smooth boundary.

Cg2—54 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct mottles; massive; hard, firm, sticky and plastic; few fine tubular pores; neutral.

Typical Pedon Location

Location in adjacent survey area: About 5 miles northeast of Pullman, in Whitman County,

Washington; about 200 feet north and 400 feet west of the southeast corner of sec. 15, T. 15 N., R. 45 E.

Range in Characteristics

Profile:
Depth to seasonal high water table—30 to 48 inches in November through June
Frequency of flooding—occasional for very brief periods in January through May

Small pockets of volcanic ash and basalt fragments are in the lower part in some pedons.

Particle-size control section (weighted average):
Clay content—25 to 30 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist

Bw horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—1 or 2 dry or moist

Cg horizon:
Hue—2.5Y or 10YR
Value—4 to 7 dry, 2 to 4 moist
Chroma—1 or 2 dry or moist
Texture—silt loam or silty clay loam

Calouse Series

Taxonomic class: Fine-silty, mixed, mesic Calcic Pachic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 15 percent
Elevation: 1,900 to 2,700 feet
Climatic data: (average annual):
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—130 to 170 days

Typical Pedon Description

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate coarse and medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; moderately acid (pH 5.7); clear smooth boundary.

BA—10 to 16 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.4); clear wavy boundary.

Bw1—16 to 23 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.8); gradual wavy boundary.

Bw2—23 to 32 inches; yellowish brown (10YR 5/4) silt loam, brown (10YR 4/3) moist; moderate medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately alkaline (pH 8.4); gradual wavy boundary.

Bk1—32 to 39 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; slightly effervescent (3 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.3); abrupt irregular boundary.

Bk2—39 to 57 inches; white (10YR 8/2) and very pale brown (10YR 7/3) silt loam, pale brown (10YR 6/3) and brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; white part is slightly cemented, and very pale brown part is noncemented; few very fine and fine roots; many very fine and fine tubular pores; few fine and medium durinodes; white part is violently effervescent (30 percent calcium carbonate equivalent) and very pale brown part is strongly effervescent (16 percent calcium carbonate equivalent); disseminated lime; 2 percent fine gravel; strongly alkaline (pH 9.0); clear wavy boundary.

Bk3—57 to 68 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; weak coarse prismatic structure; slightly hard, very friable, nonsticky and nonplastic; many very fine and fine tubular pores; few fine and medium durinodes; violently effervescent (25 percent calcium

carbonate equivalent); disseminated lime; 3 percent fine gravel; strongly alkaline (pH 9.0).

Typical Pedon Location

Map unit in which located: Calouse-Endicott-Bryden complex, 2 to 6 percent slopes
Location in survey area: About 5 miles southeast of Lewiston, in Nez Perce County; about 750 feet south and 1,230 feet west of the northeast corner of sec. 3, T. 34 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 26 inches
Depth to secondary carbonates—27 to 36 inches
Average annual soil temperature—51 to 54 degrees F

A weakly cemented Bkq horizon is below a depth of 50 inches in some pedons.

Particle-size control section (weighted average):
Clay content—18 to 23 percent

Ap horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry
Reaction—moderately acid to neutral

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Clay content—18 to 23 percent
Reaction—neutral to moderately alkaline

Bk horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry, 2 or 3 moist
Calcium carbonate equivalent—1 to 30 percent
Durinode content—0 to 5 percent
Sodium adsorption ratio—2 to 10
Reaction—moderately alkaline or strongly alkaline

Carlinton Series

Taxonomic class: Fine-silty, mixed, frigid Vitrandic Fragixeralfs

Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through it
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 20 percent
Elevation: 3,800 to 4,500 feet

Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 110 days

Typical Pedon Description

Ap—0 to 8 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; strong coarse subangular blocky structure parting to strong medium granular; slightly hard, friable, nonsticky and nonplastic; common very fine roots; strongly acid (pH 5.3); abrupt smooth boundary.
Bt1—8 to 15 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; weak very thick platy structure parting to weak coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; slightly acid (pH 6.2); clear wavy boundary.
Bt2—15 to 22 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; slightly acid (pH 6.4); clear wavy boundary.
B/E—22 to 26 inches; 80 percent light yellowish brown (10YR 6/4) silt loam B material, dark yellowish brown (10YR 3/4) moist, and 20 percent very pale brown (10YR 7/3) silt loam E material, brown (10YR 5/3) moist; many fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.
E—26 to 28 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; many fine distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many fine and very fine tubular pores; common small spots of B horizon material; slightly acid (pH 6.3); abrupt smooth boundary.
Btxb1—28 to 40 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong coarse and very coarse prismatic structure; very hard, very firm, brittle, sticky and plastic; few very fine roots along faces of prisms; common fine and very fine tubular pores; many prominent continuous dark yellowish brown (10YR 3/4) clay

films on faces of prisms and many faint patchy clay films on faces of prisms; few continuous very dark brown (10YR 2/2) organic coatings on faces of prisms; many very fine pockets of uncoated silt in prisms; many prominent continuous light gray (10YR 7/2) skeletans on faces of prisms; neutral (pH 6.7); gradual wavy boundary.

Btxb2—40 to 50 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; moderate very coarse prismatic structure parting to strong fine and medium angular blocky; very hard, firm, brittle, sticky and plastic; common fine and very fine tubular pores; many continuous prominent dark yellowish brown (10YR 3/4) clay films on faces of prisms; few continuous very dark brown (10YR 2/2) organic coatings on faces of peds; many very fine pockets of uncoated silt in prisms; common discontinuous distinct light gray (10YR 7/2) skeletans on faces of prisms; common prominent patchy iron and manganese coatings on faces of peds; neutral (pH 7.2); gradual wavy boundary.

Btb—50 to 61 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong medium and fine angular blocky structure; very hard, firm, sticky and plastic; common fine and very fine tubular pores; many discontinuous faint clay films on faces of peds and in pores; few fine and medium rounded iron and manganese concretions and common prominent patchy iron and manganese coatings on faces of peds; mildly alkaline (pH 7.5).

Typical Pedon Location

Map unit in which located: Carlinton silt loam, 2 to 10 percent slopes

Location in survey area: About 4 miles north of Winchester, in Lewis County; about 550 feet south and 2,465 feet west of the northeast corner of sec. 13, T. 34 N., R. 3 W.

Range in Characteristics

Profile:
Depth to seasonal perched water table—18 to 36 inches in February through May
Depth to fragipan—26 to 36 inches
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Clay content—19 to 22 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—strongly acid to slightly acid

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—18 to 22 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

B/E horizon:
Value (B material)—5 or 6 dry, 3 or 4 moist
Chroma (B material)—3 or 4 dry or moist
Value (E material)—6 or 7 dry, 4 or 5 moist
Chroma (E material)—2 or 3 dry or moist
Clay content—20 to 26 percent
Base saturation—60 to 80 percent
Reaction—moderately acid or slightly acid

E horizon:
Value—7 or 8 dry, 6 or 7 moist
Chroma—2 or 3 dry or moist
Clay content—18 to 24 percent
Reaction—moderately acid to neutral

Btxb horizon:
Value—3 or 4 moist
Chroma—3 or 4 dry
Clay content—28 to 34 percent
Bulk density—1.60 to 1.70 grams per centimeter
Reaction—moderately acid to neutral

Btb horizon:
Value—3 or 4 moist
Clay content—28 to 34 percent
Reaction—slightly acid to mildly alkaline

Cavendish Series

Taxonomic class: Fine-loamy, mixed, frigid Ultic Haploxeralfs

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess over material weathered from basalt
Slope range: 8 to 20 percent
Elevation: 2,600 to 4,000 feet
Climatic data (average annual):
Precipitation—24 to 25 inches
Air temperature—44 to 45 degrees F
Frost-free season (32 degrees F)—110 to 130 days

Typical Pedon Description

Ap—0 to 5 inches; brown (7.5YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure parting to weak fine granular;

slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 5 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary.

A—5 to 8 inches; brown (7.5YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine irregular pores and few fine tubular pores; 5 percent gravel; moderately acid (pH 6.0); clear wavy boundary.

Bt1—8 to 15 inches; reddish brown (5YR 5/4) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common fine irregular and tubular pores; 5 percent gravel; many faint discontinuous clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—15 to 30 inches; yellowish red (5YR 5/6) silty clay loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; few fine roots; many very fine and fine irregular pores and common fine tubular pores; 10 percent gravel; many faint discontinuous clay films lining pores and on faces of peds; neutral (pH 6.6); gradual wavy boundary.

2Bt3—30 to 43 inches; yellowish red (5YR 5/6) gravelly clay loam, yellowish red (5YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few fine roots; many very fine and fine irregular and tubular pores; 30 percent gravel; many faint continuous clay films lining pores and on faces of peds; neutral (pH 6.8); clear wavy boundary.

2Cr—43 inches; weathered basalt.

Typical Pedon Location

Location in adjacent survey area: About 1 mile south of Teakean, in Clearwater County; about 50 feet north and 1,500 feet west of the southeast corner of sec. 19, T. 37 N., R. 1 E.

Range in Characteristics

Profile:
Depth to weathered basalt—40 to 60 inches
Average annual soil temperature—45 to 47 degrees F

Particle-size control section (weighted average):
Clay content—25 to 33 percent
Coarse fragment content—10 to 35 percent

A horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist

Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay loam, clay loam, silt loam, gravelly clay loam, or gravelly silty clay loam
Coarse fragment content—5 to 20 percent
Reaction—strongly acid to neutral

2Bt horizon:
Hue—5YR, 7.5YR, or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—4 to 6 dry, 3 to 6 moist
Texture—gravelly clay loam, cobbly clay loam, or clay loam
Rock fragment content—10 to 30 percent gravel and 0 to 30 percent cobbles
Reaction—strongly acid to neutral

Chard Series

Taxonomic class: Coarse-loamy, mixed, mesic Calcic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate to a depth of 55 inches and rapid below
Landform: Dissected alluvial terraces
Parent material: Alluvium with some influence of loess in upper part
Slope range: 1 to 65 percent
Elevation: 740 to 1,360 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—52 to 53 degrees F
Frost-free season (32 degrees F)—170 to 190 days

Typical Pedon Description

Ap—0 to 6 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine tubular pores; neutral (pH 7.0); abrupt smooth boundary.

A—6 to 15 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.4); gradual wavy boundary.

Bw1—15 to 26 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate coarse prismatic structure parting to weak medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common very fine and fine roots; common very fine tubular pores; mildly alkaline (pH 7.8); gradual wavy boundary.

Bw2—26 to 32 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak coarse subangular blocky; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; mildly alkaline (pH 7.8); abrupt wavy boundary.

Bk1—32 to 39 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few very fine and fine roots; few very fine tubular pores; violently effervescent (11 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk2—39 to 46 inches; light brownish gray (10YR 6/2) fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; very soft, very friable, nonsticky and nonplastic; few very fine tubular pores; violently effervescent (5 percent calcium carbonate equivalent); disseminated lime; moderately alkaline (pH 8.4); clear wavy boundary.

2Bk3—46 to 55 inches; light gray (10YR 7/2) loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few very fine tubular pores; violently effervescent (10 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.8); abrupt wavy boundary.

3C—55 to 62 inches; multicolored sand that is dominantly gray (10YR 5/1), dark gray (10YR 4/1) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent (3 percent calcium carbonate equivalent); disseminated lime; strongly alkaline (pH 8.6).

Typical Pedon Location

Map unit in which located: Chard silt loam, 10 to 25 percent slopes (fig. 23)

Location in survey area: Near the intersection of 9th Street and 11th Avenue in Lewiston, in Nez Perce County; about 100 feet north and 2,540 feet east of the southwest corner of sec. 32, T. 36 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 16 inches

Figure 23.—A profile of Chard silt loam, 10 to 25 percent slopes (numerals on tape indicate feet).

Depth to secondary carbonates—20 to 34 inches
Average annual soil temperature—54 to 55 degrees F

Particle-size control section (weighted average):
Clay content—6 to 12 percent
Content of fine sand and coarser—15 to 30 percent

A horizon:
Value—4 or 5 dry

Chroma—2 or 3 dry
Reaction—neutral or mildly alkaline

Bw horizon:
Value—3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or loam
Reaction—neutral to moderately alkaline

Bk1, 2Bk2, and 2Bk3 horizons:
Value—4 to 6 dry, 4 or 5 moist
Chroma—2 or 3 dry or moist
Texture—loam, fine sandy loam, or very fine sandy loam
Gravel content—less than 5 percent
Calcium carbonate equivalent—1 to 12 percent
Sodium adsorption ratio—2 to 20
Reaction—moderately alkaline or strongly alkaline

3C horizon:
Value—4 to 6 dry, 3 to 5 moist
Texture—sand, loamy fine sand, or fine sand
Sodium adsorption ratio—10 to 25
Reaction—strongly alkaline or very strongly alkaline

Cramont Series

Taxonomic class: Fine, montmorillonitic, frigid Vitrandic Haploxeralfs

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills on high plateaus
Parent material: Volcanic ash, loess, material weathered from basalt
Slope range: 2 to 20 percent
Elevation: 4,100 to 5,000 feet
Climatic data (average annual):
Precipitation—25 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 85 days

Typical Pedon Description

Oi—1 inch to 0; slightly decomposed moss, needles, and twigs.
A—0 to 2 inches; light brownish gray (10YR 6/2) silt loam, very dark grayish brown (10YR 3/2) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; moderately acid (pH 5.7); clear smooth boundary.
E—2 to 4 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate thin platy structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; moderately acid (pH 5.6); clear smooth boundary.
EB—4 to 10 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; few faint pale brown (10YR 6/3) skeletans on faces of peds; strongly acid (pH 5.4); clear wavy boundary.
BE—10 to 14 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; many distinct pale brown (10YR 6/3) skeletans on faces of peds; strongly acid (pH 5.4); clear wavy boundary.
2Bt1—14 to 18 inches; dark yellowish brown (10YR 4/4) silty clay loam, dark yellowish brown (10YR 4/6) crushed, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; many distinct pale brown (10YR 6/3) skeletans on faces of peds; common distinct dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; strongly acid (pH 5.5); gradual wavy boundary.
2Bt2—18 to 31 inches; brown (7.5YR 4/4) silty clay loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure parting to strong fine angular blocky; hard, firm, sticky and plastic; common fine roots; common fine and very fine tubular pores; common distinct pale brown (10YR 6/3) discontinuous skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 5.8); gradual wavy boundary.
2Bt3—31 to 44 inches; brown (7.5YR 4/4) silty clay loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to strong medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct pale brown (10YR 6/3) skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 5.9); diffuse wavy boundary.
2Bt4—44 to 65 inches; brown (7.5YR 4/4) silty clay

loam, brown (7.5YR 5/4) crushed, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to strong medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct pale brown (10YR 6/3) discontinuous skeletans on faces of peds; many prominent brown (7.5YR 4/4) clay films on faces of peds; 3 percent gravel; moderately acid (pH 6.0).

Typical Pedon Location

Map unit in which located: Cramont-Culdesac complex, 2 to 20 percent slopes
Location in survey area: About 1 mile south of Soldiers Meadow Reservoir, in Nez Perce County; about 930 feet south and 720 feet west of the northeast corner of sec. 5, T. 32 N., R. 3 W.

Range in Characteristics

Profile:
Depth to cobbly material—40 to 60 inches or more
Average annual soil temperature—43 to 45 degrees F

Particle-size control section (weighted average):
Clay content—35 to 40 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Volcanic glass content (0.02- to 2.0-millimeter fraction)—10 to 30 percent
Coarse silt and sand content—30 to 45 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.2 percent
Reaction—moderately acid to neutral

E and EB horizons:
Value—6 or 7 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—14 to 24 percent
Volcanic glass content (0.02- to 2-millimeter fraction)—5 to 30 percent
Coarse silt and sand content—30 to 45 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.2 percent
Reaction—strongly acid to slightly acid

2Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry
Chroma—4 to 6 dry or moist
Texture—silty clay loam or silty clay
Gravel content—less than 5 percent
Clay content—32 to 42 percent
Base saturation—55 to 75 percent
Reaction—strongly acid to slightly acid

3Bt horizon (present only in some pedons):
Hue—7.5YR or 10YR
Chroma—4 to 6 dry or moist
Clay content—32 to 40 percent
Rock fragment content—5 to 25 percent

Crowers Series

Taxonomic class: Coarse-loamy, mixed, mesic Calcic Pachic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides
Parent material: Loess with a minor amount of volcanic ash over colluvium derived from basalt
Slope range: 45 to 80 percent
Elevation: 740 to 2,800 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—48 to 52 degrees F
Frost-free season (32 degrees F)—160 to 190 days

Typical Pedon Description

A1—0 to 10 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; weak coarse subangular blocky structure parting to strong fine granular; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine irregular pores; neutral (pH 6.8); clear smooth boundary.
A2—10 to 17 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse subangular blocky structure parting to strong fine granular; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine roots; many very fine irregular pores; 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.
A3—17 to 27 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium granular; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots; many very fine irregular pores; 5 percent gravel; mildly alkaline (pH 7.4); clear smooth boundary.
Bw—27 to 31 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine

tubular pores; 5 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.8); clear irregular boundary.

2Bk1—31 to 41 inches; brown (10YR 5/3) very cobbly silt loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; strongly effervescent (5 percent calcium carbonate equivalent); lime is disseminated and in many very fine filaments and coatings on coarse fragments; 15 percent gravel and 25 percent cobbles; moderately alkaline (pH 8.2); clear wavy boundary.

2Bk2—41 to 62 inches; brown (10YR 5/3) cobbly silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common fine and very fine tubular pores; strongly effervescent (5 percent calcium carbonate equivalent); lime is disseminated and in many fine and medium seams and soft masses and coatings on coarse fragments; 5 percent gravel and 10 percent cobbles; moderately alkaline (pH 8.4).

Typical Pedon Location

Map unit in which located: Limekiln-Crowers association, 45 to 80 percent slopes

Location in survey area: About 8 miles south of Lewiston, in Nez Perce County; about 170 feet north and 1,600 feet west of the southeast corner of sec. 27, T. 34 N., R. 5 W.

Range in Characteristics

Profile:
Mollic epipedon thickness—22 to 34 inches
Depth to 2Bk horizon—28 to 36 inches
Average annual soil temperature—50 to 54 degrees F

Particle-size control section (weighted average):
Clay content—16 to 18 percent
Coarse fragment content—15 to 30 percent
Silt content—more than 50 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Gravel content (lower part)—0 to 5 percent
Clay content (lower part)—12 to 16 percent
Reaction—neutral or mildly alkaline

Bw horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Texture—silt loam or cobbly silt loam
Coarse fragment content—5 to 25 percent
Clay content—16 to 22 percent
Reaction—neutral or mildly alkaline

2Bk1 horizon:
Texture—extremely cobbly silt loam or very cobbly silt loam
Coarse fragment content—35 to 70 percent
Clay content—16 to 24 percent
Calcium carbonate equivalent—5 to 10 percent

2Bk2 horizon (absent in some pedons):
Coarse fragment content—15 to 35 percent
Clay content—16 to 24 percent
Calcium carbonate equivalent—5 to 10 percent

Culdesac Series

Taxonomic class: Ashy over loamy, mixed, frigid Alfic Vitrixerands

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on high plateaus
Parent material: Volcanic ash, loess, material weathered from basalt
Slope range: 10 to 20 percent
Elevation: 4,100 to 5,000 feet
Climatic data (average annual):
Precipitation—26 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 85 days

Typical Pedon Description

Oi—2 inches to 1 inch; undecomposed needles and twigs.

Oe—1 inch to 0; partially decomposed needles and twigs.

A—0 to 3 inches; yellowish brown (10YR 5/4) silt loam, dark brown (7.5YR 3/4) moist; weak medium and thick platy structure parting to weak fine and medium subangular blocky; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine irregular pores; slightly acid (pH 6.4); clear wavy boundary.

Bw1—3 to 10 inches; light yellowish brown (10YR 6/4) silt loam, brown (7.5YR 4/4) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and common fine irregular pores; slightly acid (pH 6.2); gradual wavy boundary.

Bw2—10 to 18 inches; light yellowish brown (10YR

6/4) silt loam, strong brown (7.5YR 4/6) moist; weak fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and common fine irregular pores; slightly acid (pH 6.2); abrupt wavy boundary.

2Btb1—18 to 25 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (7.5YR 4/4) moist; weak fine prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; many medium and coarse roots and common very fine and fine roots; many very fine and fine and common medium irregular pores and many very fine tubular pores; common faint and few distinct clay films lining pores and on faces of peds; few light yellowish brown (10YR 6/4) skeletans on faces of peds; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.

2Btb2—25 to 41 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; moderate fine and medium prismatic structure parting to moderate fine subangular blocky; hard, firm, sticky and plastic; common fine and medium roots; many very fine and fine and common medium irregular pores and common very fine and fine tubular pores; many distinct clay films lining pores and on faces of peds; 5 percent gravel; common light yellowish brown (10YR 6/4) skeletans on faces of peds; slightly acid (pH 6.5); clear wavy boundary.

2Btb3—41 to 54 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine prismatic structure parting to common fine subangular blocky; very hard, firm, sticky and plastic; few very fine roots and common fine and medium roots; many very fine and fine and common medium irregular pores and common very fine and fine tubular pores; common faint and few distinct clay films lining pores and on faces of peds; 5 percent gravel; few light yellowish brown (10YR 6/4) skeletans on faces of peds; neutral (pH 6.6); clear wavy boundary.

2Btb4—54 to 60 inches; brown (7.5YR 5/4) clay loam, strong brown (7.5YR 4/6) moist; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; very hard, firm, sticky and plastic; few very fine, fine, and medium roots; many very fine and fine and common medium irregular pores; few distinct and common faint clay films lining pores and on faces of peds; 10 percent gravel; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Cramont-Culdesac complex, 2 to 20 percent slopes

Location in survey area: About 3 miles east of Soldiers Meadow Reservoir, in Lewis County; about 150 feet north and 2,200 feet east of the southwest corner of sec. 34, T. 33 N., R. 3 W.

Range in Characteristics

Profile:

Average annual soil temperature—42 to 45 degrees F

Volcanic ash mantle:

Thickness—14 to 20 inches

Volcanic glass content (0.02- to 2.0-millimeter fraction)—20 to 45 percent

Acid-oxalate extractable Al plus ½ Fe—0.5 to 2.0 percent

Bulk density—0.75 to 0.95 gram per centimeter

15-bar water retention—8 to 12 percent

Lower part of particle-size control section (weighted average):

Clay content—28 to 35 percent

Gravel content—0 to 5 percent

A horizon:

Hue—7.5YR or 10YR

Value—4 or 5 dry, 2 to 4 moist

Chroma—2 to 4 dry or moist

Reaction—moderately acid to neutral

Bw horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Fine gravel content—0 to 10 percent

Reaction—moderately acid or slightly acid

2Btb horizon (upper part):

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Gravel content—0 to 10 percent

Clay content—28 to 38 percent

Base saturation—55 to 70 percent

Reaction—moderately acid to neutral

2Btb horizon (lower part):

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Chroma—4 to 6 dry or moist

Texture—clay loam, silty clay loam, gravelly clay loam, or cobbly clay loam

Coarse fragment content—0 to 25 percent

Clay content—28 to 38 percent

Reaction—moderately acid to neutral

3Btb horizon (present only in some pedons):
Texture—extremely gravelly clay loam or very gravelly clay loam
Clay content—30 to 38 percent

Dragnot Series

Taxonomic class: Fine-loamy, mixed, mesic Typic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides
Parent material: Colluvium derived from granodiorite
Slope range: 40 to 70 percent
Elevation: 1,200 to 3,000 feet
Climatic data (average annual):
Precipitation—22 to 24 inches
Air temperature—47 to 49 degrees F
Frost-free season (32 degrees F)—120 to 150 days

Typical Pedon Description

A1—0 to 4 inches; brown (10YR 5/3) stony loam, very dark grayish brown (10YR 3/2) moist; weak fine to coarse granular structure; slightly hard, very friable, slightly sticky and nonplastic; common very fine and fine roots; many very fine, fine, and medium tubular pores; 10 percent fine gravel and 3 percent stones; neutral (pH 7.0)); clear smooth boundary.
A2—4 to 11 inches; brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine to coarse granular structure; slightly hard, very friable, slightly sticky and nonplastic; many medium and common very fine and fine roots; many very fine and fine tubular and irregular pores; 10 percent fine gravel; neutral (pH 6.8); clear smooth boundary.
Bt—11 to 18 inches; brown (10YR 4/3) fine gravelly loam, dark brown (10YR 3/3) moist; weak fine to coarse subangular blocky structure; hard, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; many very fine and fine tubular and irregular pores; common faint patchy clay films on faces of peds and in pores; 15 percent fine gravel; neutral (pH 6.8); abrupt wavy boundary.
BC—18 to 31 inches; brown (10YR 5/3) very gravelly sandy loam, brown (10YR 4/3) moist; massive; hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots; common very fine and fine tubular and irregular pores; 60 percent fine gravel; neutral (pH 6.8); abrupt wavy boundary.
R—31 inches; granodiorite.

Typical Pedon Location

Map unit in which located: Johnson-Dragnot association, 40 to 70 percent slopes
Location in survey area: About 12 miles west of Kamiah, in Lewis County; about 2,000 feet north and 2,100 feet east of the southwest corner of sec. 7, T. 34 N., R. 3 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—8 to 16 inches
Base saturation—75 to 95 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—49 to 52 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Texture—loam or fine gravelly loam
Gravel content—5 to 20 percent, dominantly fine gravel
Clay content—18 to 24 percent
Reaction—slightly acid or neutral

BC horizon (absent in some pedons):
Value—4 or 5 dry
Chroma—3 or 4 dry or moist
Texture—very gravelly sandy loam or very gravelly loam
Clay content—5 to 15 percent
Gravel content—40 to 60 percent, dominantly fine gravel
Reaction—slightly acid or neutral

Driscoll Series

Taxonomic class: Fine, montmorillonitic, mesic Ultic Palexerolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 25 percent
Elevation: 2,300 to 3,400 feet
Climatic data (average annual):
Precipitation—22 to 24 inches

Air temperature—45 to 47 degrees F
Frost-free season (32 degrees F)—100 to 130 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately acid (pH 5.6); clear smooth boundary.

A—7 to 13 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; slightly acid (pH 6.4); gradual wavy boundary.

Bt—13 to 19 inches; brown (10YR 4/3) silt loam, mixed very dark grayish brown (10YR 3/2) and dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; few very fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; neutral (pH 6.6); clear wavy boundary.

BE—19 to 27 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; common medium faint mottles that are yellowish brown (10YR 5/4) when moist; weak medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; slightly brittle; few very fine roots; common very fine and fine and few medium tubular pores; few fine iron and manganese concretions; common dark organic stains on faces of peds; neutral (pH 6.6); clear wavy boundary.

E—27 to 31 inches; light gray (10YR 7/2) silt loam, grayish brown (10YR 5/2) moist; common fine distinct mottles that are yellowish brown (10YR 5/4) when moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and fine and few medium tubular pores; few fine iron and manganese concretions; neutral (pH 6.6); abrupt wavy boundary.

Btb1—31 to 37 inches; mixed pale brown (10YR 6/3) and light brown (7.5YR 6/4) silty clay, dark brown (10YR 4/3 and 7.5YR 4/4) moist; moderate coarse subangular blocky structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine and fine tubular pores; many prominent continuous clay films on faces of peds and in pores; common fine iron and manganese concretions; moderately acid (pH 5.6); clear wavy boundary.

Btb2—37 to 46 inches; light yellowish brown (10YR 6/4) silty clay, dark yellowish brown (10YR 4/6) moist; moderate coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine and fine tubular pores; many distinct and common prominent discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; slightly acid (pH 6.5); gradual wavy boundary.

2Btb3—46 to 60 inches; mixed light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6) silty clay loam, yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/6) moist; weak coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine and fine tubular pores; common faint patchy clay films and few distinct discontinuous clay films on faces of peds and in pores; few fine iron and manganese concretions; neutral (pH 7.3).

Typical Pedon Location

Map unit in which located: Southwick-Driscoll complex, 3 to 12 percent slopes

Location in survey area: About 3 miles west of Peck, in Nez Perce County; about 850 feet north and 1,650 feet east of the southwest corner of sec. 9, T. 36 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—11 to 20 inches
Depth to seasonal perched water table—15 to 30 inches in January through April
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—40 to 50 percent
Coarse fragment content—0 to 3 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Clay content—22 to 26 percent
Reaction—slightly acid or neutral

E horizon:
Value—6 to 8 dry, 4 to 6 moist

Texture—silt loam or silt
Clay content—12 to 22 percent
Reaction—moderately acid to neutral

Btb horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—silty clay or silty clay loam
Clay content—38 to 55 percent
Base saturation—60 to 75 percent in some part
Reaction—moderately acid to neutral

2Btb horizon:
Hue—7.5YR or 10YR
Value—6 or 7 dry, 4 or 5 moist
Chroma—4 to 6 dry
Gravel content—0 to 5 percent
Clay content—32 to 38 percent
Reaction—slightly acid or neutral

Taxadjunct Feature

The Driscoll soils in this survey area are less than 30 inches deep to the E horizon, which is outside the range for the series. This difference, however, does not significantly affect use and management.

Endicott Series

Taxonomic class: Coarse-silty, mixed, mesic Haplic Durixerolls

Depth class: Moderately deep to a duripan
Drainage class: Well drained
Permeability: Moderate above the duripan
Landform: Hills on plateaus
Parent material: Loess, material weathered from basalt
Slope range: 2 to 16 percent
Elevation: 1,400 to 2,500 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 180 days

Typical Pedon Description

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate thick platy structure parting to moderate medium granular; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; neutral (pH 6.7); clear smooth boundary.

Ap2—5 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; neutral (pH 6.6); clear wavy boundary.

A—9 to 12 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Bw—12 to 20 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; moderately alkaline (pH 8.1); clear wavy boundary.

Bk—20 to 30 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; weak fine prismatic structure; slightly hard, very friable, nonsticky and slightly plastic; few fine and very fine roots; many fine and very fine tubular pores; few extremely coarse platelike durinodes; strongly effervescent (9 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; less than 2 percent gravel; moderately alkaline (pH 8.3); abrupt wavy boundary.

2Bkq—30 to 36 inches; white (10YR 8/2) gravelly silt loam, light brownish gray (10YR 6/2) moist; massive; hard and very hard, firm and very firm, nonsticky and nonplastic; very few very fine roots; common very fine tubular pores; many medium and coarse platelike durinodes; violently effervescent (45 percent calcium carbonate equivalent); disseminated lime; 30 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.

2Bkqm—36 to 60 inches; white (10YR 8/2) strongly cemented duripan, very pale brown (10YR 7/3) moist; very thick platy structure; extremely hard, extremely firm; thin lenses of sandy loam between plates; violently effervescent (80 percent calcium carbonate equivalent); strongly alkaline (pH 9.0).

Typical Pedon Location

Map unit in which located: Endicott-Bryden complex, 2 to 6 percent slopes (fig. 24)

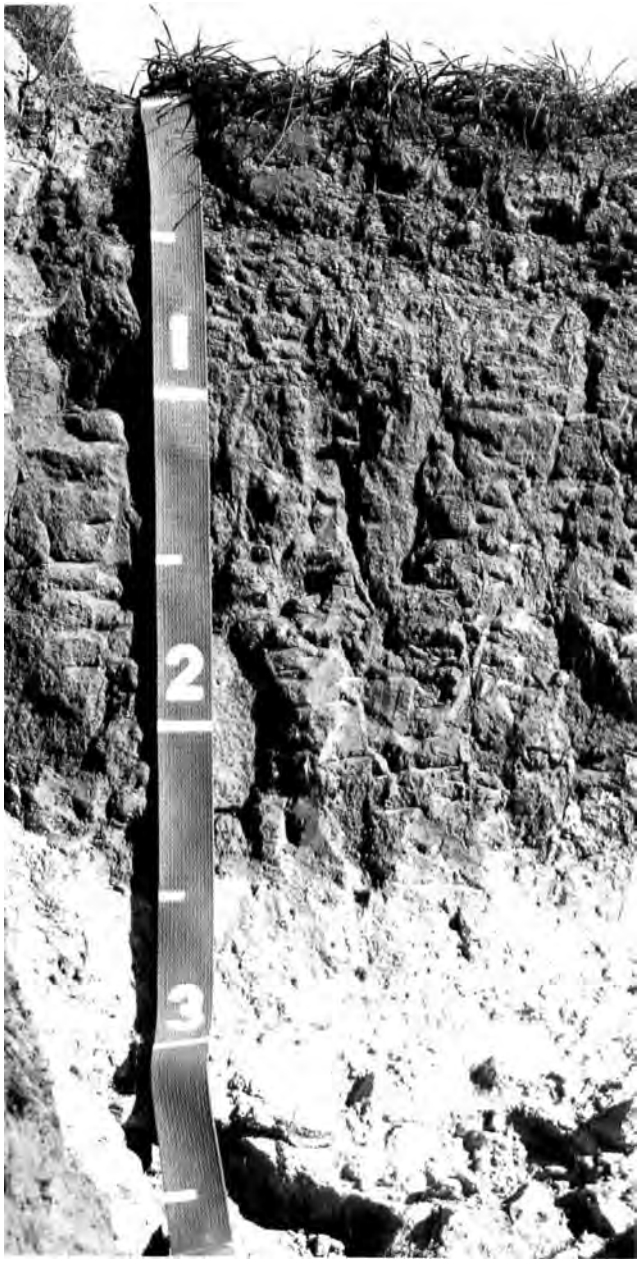


Figure 24.—A profile of Endicott silt loam in an area of Endicott-Bryden complex, 2 to 6 percent slopes. A strongly cemented duripan is at a depth of 3 feet (numerals on tape indicate feet).

Location in survey area: About 3 miles south of Lewiston Orchards, in Nez Perce County; about 2,240 feet north and 1,890 feet west of the southeast corner of sec. 34, T. 35 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 24 inches
Depth to calcic horizon—22 to 34 inches
Depth to duripan—28 to 40 inches
Depth to bedrock—50 to 60 inches or more
Average annual soil temperature—50 to 54 degrees F

Particle-size control section (weighted average):
Clay content—14 to 18 percent
Coarse fragment content—5 to 10 percent

Ap and A horizons:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid to mildly alkaline

Bw horizon, and BA horizon (present only in some pedons):
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Clay content—14 to 18 percent
Reaction—neutral to moderately alkaline

Bk horizon:
Value—5 to 8 dry, 4 to 6 moist
Chroma—2 to 4 dry or moist
Calcium carbonate equivalent—5 to 25 percent
Clay content—14 to 18 percent
Reaction—moderately alkaline or strongly alkaline

2Bkq horizon:
Value—6 or 7 moist
Chroma—2 or 3 dry or moist
Texture—gravelly silt loam, gravelly loam, or very gravelly loam
Coarse fragment content—20 to 50 percent
Calcium carbonate equivalent—40 to 80 percent
Reaction—moderately alkaline to very strongly alkaline

Taxadjunct Feature

The content of clay in the Endicott soil in the Calouse-Endicott-Bryden complex, 2 to 6 percent slopes, is slightly higher than the range for the Endicott series. This difference, however, does not significantly affect use and management.

Entic Haploxerolls

Taxonomic class: Entic Haploxerolls

Depth class: Shallow and moderately deep to a paralithic contact
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides
Parent material: Colluvium derived from shale, phyllite, and limestone
Slope range: 40 to 80 percent

Elevation: 1,300 to 2,400 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—51 to 54 degrees F
Frost-free season (32 degrees F)—140 to 180 days

Representative Pedon Description

A—0 to 8 inches; dark grayish brown (10YR 4/2) gravelly loam, very dark gray (10YR 3/1) moist; weak and moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; disseminated lime; 25 percent gravel; moderately alkaline (pH 8.2); clear wavy boundary.
AC—8 to 17 inches; dark gray (10YR 4/1) gravelly loam, very dark gray (10YR 3/1) moist; weak and moderate fine and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common very fine and fine tubular pores; strongly effervescent; disseminated lime; 25 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.
Cr—17 to 28 inches; gray (N 5/0) soft weathered phyllite, very dark gray (N 3/0) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; few very fine and fine tubular pores; strongly effervescent; disseminated lime; 65 percent gravel; moderately alkaline (pH 8.0); gradual wavy boundary.
R—28 inches; phyllite.

Representative Pedon Location

Map unit in which located: Entic Haploxerolls, very steep
Location in survey area: About 5 miles southwest of Waha, in Nez Perce County; about 2,525 feet north and 1,750 feet east of the southwest corner of sec. 32, T. 33 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—7 to 12 inches
Depth to paralithic contact—12 to 30 inches
Average annual soil temperature—54 to 57 degrees F

Particle-size control section (weighted average):
Clay content—10 to 22 percent
Gravel content—10 to 50 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist

AC horizon:
Value—4 or 5 dry
Chroma—1 to 3 dry or moist
Texture—gravelly loam, very gravelly loam, or loam
Gravel content—10 to 50 percent
Clay content—10 to 22 percent

Flybow Series

Taxonomic class: Loamy-skeletal, mixed, nonacid, mesic Lithic Xerorthents

Depth class: Very shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus, canyonsides
Parent material: Material weathered from basalt and greenstone
Slope range: 10 to 100 percent
Elevation: 1,000 to 3,500 feet
Climatic data (average annual):
Precipitation—16 to 26 inches
Air temperature—45 to 50 degrees F
Frost-free season (32 degrees F)—120 to 170 days

Typical Pedon Description

A1—0 to 2 inches; dark brown (10YR 3/3) very gravelly silt loam, dark brown (7.5YR 3/2) moist; weak very fine and fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine roots; many very fine tubular and irregular pores; 35 percent gravel and 5 percent cobbles; neutral (pH 7.2); clear smooth boundary.
A2—2 to 4 inches; brown (7.5YR 4/4) very gravelly silt loam, dark brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine roots; common very fine and fine tubular pores; few faint clay films on faces of peds; 35 percent gravel and 10 percent cobbles; neutral (pH 6.8); abrupt wavy boundary.
R—4 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Watama-Flybow complex, 10 to 35 percent slopes
Location in survey area: About 5 miles southwest of Nezperce, in Lewis County; about 900 feet south and 2,550 feet west of the northeast corner of sec. 20, T. 33 N., R. 1 E.

Range in Characteristics

Profile:
Depth to bedrock—4 to 10 inches
Average annual soil temperature—47 to 52 degrees F

A horizon:
Hue—10YR or 7.5YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Clay content—15 to 25 percent
Coarse fragment content—40 to 60 percent
Reaction—slightly acid or neutral

Garfield Series

Taxonomic class: Fine, mixed, mesic Mollic Haploxeralfs

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 8 to 12 percent
Elevation: 2,500 to 2,800 feet
Climatic data (average annual):
Precipitation—19 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—120 to 150 days

Typical Pedon Description

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to strong medium subangular blocky; very hard, very firm, sticky and plastic; many very fine and common fine roots; many fine and very fine tubular pores and common very fine interstitial pores; slightly acid (pH 6.2); abrupt smooth boundary.

Bt1—4 to 14 inches; brown (7.5YR 4/4) silty clay, dark brown (7.5YR 3/4) moist; strong medium and coarse prismatic structure parting to strong fine and medium subangular blocky; very hard, very firm, very sticky and very plastic; many very fine roots; many fine and very fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common organic coatings on vertical faces of peds; many fine round black concretions; neutral (pH 6.6); clear wavy boundary.

Bt2—14 to 23 inches; yellowish brown (10YR 5/6) silty clay, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure parting to strong fine and medium subangular blocky; very hard, firm, very sticky and very plastic; common very fine roots; many fine and very fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; common organic coatings on vertical faces of peds; many fine round black concretions; neutral (pH 6.8); gradual wavy boundary.

Bt3—23 to 29 inches; yellowish brown (10YR 5/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; many very fine and common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common prominent discontinuous skeletans on faces of peds; common round black concretions; neutral (pH 6.8); gradual wavy boundary.

Bt4—29 to 36 inches; brownish yellow (10YR 6/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; many very fine and common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common round black concretions; few worm channels; mildly alkaline (pH 7.4); gradual wavy boundary.

Bt5—36 to 61 inches; brownish yellow (10YR 6/6) silty clay loam, yellowish brown (10YR 4/4) moist; weak coarse prismatic structure; hard, firm, sticky and plastic; common very fine roots concentrated along faces of peds; many fine and very fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many round black concretions; mildly alkaline (pH 7.6).

Typical Pedon Location

Map unit in which located: Naff-Palouse-Garfield complex, 8 to 20 percent slopes
Location in survey area: About 2 miles southeast of Genesee, in Nez Perce County; about 1,600 feet north and 2,300 feet west of the southeast corner of sec. 24, T. 37 N., R. 5 W.

Range in Characteristics

Profile:
Average annual soil temperature—48 to 52 degrees F

Particle-size control section (weighted average):
Clay content—35 to 40 percent

A horizon:
Hue—7.5YR or 10YR

Value—4 or 5 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist

Bt horizon (upper part):
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay or silty clay loam
Clay content—35 to 55 percent
Reaction—neutral to moderately alkaline

Bt horizon (lower part):
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6 dry, 3 or 4 moist
Texture—silt loam or silty clay loam
Clay content—25 to 40 percent
Reaction—neutral to moderately alkaline

Gwin Series

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Argixerolls

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides, hills on plateaus
Parent material: Colluvium derived from basalt mixed with loess
Slope range: 5 to 75 percent
Elevation: 1,200 to 4,800 feet
Climatic data (average annual):
Precipitation—16 to 28 inches
Air temperature—45 to 51 degrees F
Frost-free season (32 degrees F)—90 to 160 days

Typical Pedon Description

A—0 to 6 inches; brown (10YR 4/3) very stony silt loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine and very fine granular; soft, friable, sticky and plastic; many fine and very fine roots; many fine and very fine irregular pores; 25 percent gravel, 10 percent cobbles, and 10 percent stones; neutral (pH 6.6); clear smooth boundary.
Bt—6 to 12 inches; brown (7.5YR 4/4) extremely gravelly silty clay loam, dark brown (7.5YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, very sticky and very plastic; common fine and very fine roots; common fine irregular pores; few faint discontinuous very dark grayish brown (10YR 3/2) clay films on faces of peds; 40 percent gravel and 20 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.
R—12 inches; basalt.

Typical Pedon Location

Map unit in which located: Kettenbach-Gwin complex, 35 to 75 percent slopes
Location in survey area: About 5 miles southeast of Peck, in Nez Perce County; about 50 feet south and 1,530 feet east of the northwest corner of sec. 32, T. 36 N., R. 1 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—7 to 18 inches
Depth to bedrock—10 to 20 inches
Average annual soil temperature—48 to 52 degrees F

Particle-size control section (weighted average):
Clay content—24 to 35 percent
Rock fragment content—50 to 80 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—extremely gravelly silty clay loam, very gravelly silty clay loam, extremely cobbly silty clay loam, extremely gravelly clay loam, very gravelly clay loam, or very gravelly silt loam
Rock fragment content—50 to 80 percent
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

Haploxerolls

Taxonomic class: Haploxerolls

Depth class: Moderately deep to very deep
Drainage class: Well drained
Permeability: Moderate and moderately slow
Landform: Landslides
Parent material: Colluvium derived from interbedded basalt
Slope range: 2 to 20 percent
Elevation: 800 to 1,300 feet
Climatic data (average annual):
Precipitation—12 to 13 inches
Air temperature—52 to 54 degrees F
Frost-free season (32 degrees F)—180 to 190 days

Representative Pedon Description

A1—0 to 7 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark gray (10YR 3/1) moist; strong fine and medium granular structure; slightly hard, friable, sticky and plastic; many fine and very fine roots; many very fine tubular pores; neutral (pH 7.2); clear smooth boundary.

A2—7 to 14 inches; very dark grayish brown (10YR 3/2) silty clay loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; many very fine tubular pores; mildly alkaline (pH 7.4); clear wavy boundary.

Bw—14 to 23 inches; olive brown (2.5Y 4/3) silty clay loam, dark olive brown (2.5Y 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine and very fine roots; common fine and very fine tubular pores; 10 percent gravel; moderately alkaline (pH 8.0); clear wavy boundary.

Bk1—23 to 34 inches; light olive brown (2.5Y 5/3) silty clay loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; common fine and very fine roots; many fine and very fine tubular pores; slightly effervescent (8 percent calcium carbonate equivalent); common irregular carbonate filaments; 10 percent gravel; strongly alkaline (pH 8.8); clear wavy boundary.

Bk2—34 to 60 inches; light gray (2.5Y 7/2) gravelly clay loam, light olive brown (2.5Y 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; strongly effervescent (11 percent calcium carbonate equivalent); disseminated lime; 15 percent gravel; strongly alkaline (pH 9.2).

Representative Pedon Location

Map unit in which located: Haploxerolls, rolling
Location in survey area: About 2 miles south of downtown Lewiston, in Nez Perce County; about 2,650 feet south and 3,450 feet west of the northeast corner of sec. 12, T. 35 N., R. 6 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—14 to 26 inches
Depth to secondary carbonates—20 to 43 inches
Depth to bedrock—30 to 60 inches or more
Average annual soil temperature—54 to 56 degrees F

Particle-size control section (weighted average):
Clay content—24 to 34 percent
Coarse fragment content—0 to 25 percent

A horizon:
Hue—2.5Y or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Hue—2.5Y or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—1 to 3 dry or moist
Texture—silt loam, silty clay loam, clay loam, gravelly clay loam, or cobbly clay loam
Coarse fragment content—0 to 25 percent
Clay content—24 to 40 percent
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Hue—2.5Y or 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—2 or 3 dry, 3 or 4 moist
Texture—silt loam, silty clay loam, clay loam, gravelly clay loam, or cobbly clay loam
Coarse fragment content—0 to 35 percent
Clay content—24 to 40 percent
Reaction—moderately alkaline to very strongly alkaline

Hatwai Series

Taxonomic class: Fine-silty, mixed, mesic Typic Natrixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills on plateaus, canyonsides
Parent material: Loess
Slope range: 1 to 65 percent
Elevation: 1,500 to 2,200 feet
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—150 to 170 days

Typical Pedon Description

Ap1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to weak medium granular; soft, friable, slightly sticky and

slightly plastic; common very fine and fine roots; many very fine tubular pores; slightly acid (pH 6.1); abrupt smooth boundary.

Ap2—4 to 13 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium and thick platy structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; slightly acid (pH 6.2); clear smooth boundary.

E—13 to 21 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; mildly alkaline (pH 7.5); abrupt smooth boundary.

Btn—21 to 26 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; strong medium and coarse prismatic structure; very hard, firm, sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; few distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common distinct skeletans on faces of peds; common very dark grayish brown (10YR 3/2) organic coatings on faces of peds; moderately alkaline (pH 8.0); clear smooth boundary.

Btkn—26 to 36 inches; brown (10YR 5/3) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; common distinct clay films on faces of peds; few distinct skeletans on faces of peds; few organic coatings on faces of peds; strongly effervescent; many fine seams and filaments of lime; strongly alkaline (pH 8.8); clear smooth boundary.

Btk—36 to 50 inches; brown (10YR 5/3) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; few distinct patchy clay films on faces of peds; strongly effervescent; common fine seams and filaments of lime; strongly alkaline (pH 9.0); gradual smooth boundary.

Btkb—50 to 66 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure; hard, friable, sticky and plastic; many very fine and fine tubular pores; common distinct discontinuous clay films lining pores; slightly effervescent; disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.6).

Typical Pedon Location

Map unit in which located: Broadax-Hatwai complex, 1 to 8 percent slopes (fig. 25)

Figure 25.—A profile of Hatwai silt loam in an area of Broadax-Hatwai complex, 1 to 8 percent slopes. A natric horizon is at a depth of about 15 inches (numerals on tape indicate feet).

Location in survey area: About 5 miles east of Lewiston Orchards, in Nez Perce County; about 2,575 feet south and 2,600 feet east of the northwest corner of sec. 15, T. 35 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 18 inches
Organic matter content in mollic epipedon (below 18 inches)—less than 1 percent
Depth to natric horizon—15 to 21 inches
Depth to secondary carbonates—20 to 35 inches
Number of dry days (soil moisture control section)—75 to 90
Average annual soil temperature—51 to 54 degrees F

Particle-size control section (weighted average):
Clay content—22 to 32 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

E horizon (absent in some pedons):
Value—5 or 6 dry
Reaction—neutral or mildly alkaline

Btn horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—22 to 34 percent
Sodium adsorption ratio—13 to 20
Exchangeable sodium percentage—30 to 55
Reaction—moderately alkaline or strongly alkaline

Btkn horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—22 to 34 percent
Sodium adsorption ratio—20 to 40
Exchangeable sodium percentage—30 to 55
Reaction—moderately alkaline or strongly alkaline

Btk and Btkb horizons:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—16 to 30 percent
Reaction—moderately alkaline to very strongly alkaline

Hooverton Series

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides
Parent material: Colluvium derived from basalt
Slope range: 35 to 75 percent
Elevation: 2,800 to 5,300 feet
Climatic data (average annual):
Precipitation—22 to 28 inches
Air temperature—44 to 50 degrees F
Frost-free season (32 degrees F)—70 to 120 days

Typical Pedon Description

A—0 to 11 inches; very dark grayish brown (10YR 3/2) stony loam, very dark brown (10YR 2/2) moist; strong fine and medium granular structure; soft, friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; common fine and very fine tubular pores; 20 percent gravel, 3 percent cobbles, and 3 percent stones; neutral (pH 6.8); clear wavy boundary.

BA—11 to 17 inches; brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; 15 percent gravel and 25 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt1—17 to 26 inches; dark yellowish brown (10YR 4/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; many very fine tubular pores; very few faint patchy clay films on faces of peds; 15 percent gravel, 40 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.

Bt2—26 to 35 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay loam, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; common very fine tubular pores; very few faint patchy clay films on faces of peds; 10 percent gravel, 60 percent cobbles, and 5 percent

stones; slightly acid (pH 6.4); clear wavy boundary.
R—35 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Hooverton stony loam, 35 to 75 percent slopes
Location in survey area: About 11 miles south of Winchester, in Lewis County; about 750 feet north and 1,000 feet east of the southwest corner of sec. 30, T. 32 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 18 inches
Base saturation—75 to 100 percent
Depth to bedrock—24 to 40 inches
Average annual soil temperature—48 to 52 degrees F

Particle-size control section (weighted average):
Clay content—24 to 34 percent
Coarse fragment content—60 to 80 percent

A horizon:
Hue—7.5YR or 10YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 to 4 dry
Reaction—slightly acid or neutral

BA horizon:
Hue—7.5YR or 10YR
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—very cobbly loam, very cobbly silt loam, or very gravelly silt loam
Rock fragment content—35 to 50 percent
Clay content—20 to 27 percent
Reaction—slightly acid or neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—3 or 4 dry or moist
Texture—very cobbly clay loam, extremely cobbly clay loam, very cobbly silt loam, very gravelly silty clay loam, extremely gravelly silt loam, or very gravelly loam
Rock fragment content—50 to 85 percent
Clay content—24 to 34 percent
Reaction—slightly acid or neutral

Immig Series

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Typic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Canyonsides
Parent material: Colluvium derived from greenstone and basalt
Slope range: 40 to 80 percent
Elevation: 2,000 to 4,000 feet
Climatic data (average annual):
Precipitation—15 to 20 inches
Air temperature—45 to 49 degrees F
Frost-free season (32 degrees F)—120 to 160 days

Typical Pedon Description

A—0 to 5 inches; dark brown (10YR 3/3) very stony clay loam, very dark brown (10YR 2/2) moist; moderate very fine and fine granular structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; neutral (pH 6.8); clear wavy boundary.
BA—5 to 10 inches; dark brown (10YR 3/3) gravelly clay loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to weak very fine and fine granular; slightly hard, firm, sticky and plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 30 percent gravel and 5 percent cobbles; neutral (pH 6.6); clear wavy boundary.
Bt1—10 to 15 inches; dark brown (7.5YR 3/3) extremely gravelly clay, dark brown (7.5YR 3/3) moist; strong fine and medium subangular blocky structure; hard, very firm, very sticky and very plastic; common very fine and fine roots; common very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; 55 percent gravel and 15 percent cobbles; neutral (pH 6.6); clear wavy boundary.
Bt2—15 to 21 inches; dark brown (7.5YR 3/4) extremely gravelly clay, dark brown (7.5YR 3/4) moist; strong fine and medium subangular blocky structure; hard, very firm, very sticky and very plastic; few fine roots; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; 65 percent gravel and 15 percent cobbles; neutral (pH 6.6); gradual wavy boundary.
Bt3—21 to 29 inches; strong brown (7.5YR 4/6) extremely gravelly clay, strong brown (7.5YR 4/6) moist; strong fine and medium subangular

blocky structure; hard, very firm, very sticky and very plastic; few fine roots throughout and matted on coarse fragments; few very fine and fine tubular pores; many distinct clay films on faces of peds and in pores; 70 percent gravel and 20 percent cobbles; neutral (pH 6.6); clear wavy boundary.

R—29 inches; greenstone; paralithic material near upper boundary.

Typical Pedon Location

Map unit in which located: Immig very stony clay loam, 40 to 80 percent slopes

Location in survey area: About 3 miles southwest of Waha, in Nez Perce County; about 1,125 feet south and 2,350 feet west of the northeast corner of sec. 24, T. 33 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 16 inches
Depth to argillic horizon—8 to 16 inches
Depth to bedrock—26 to 40 inches
Base saturation—75 to 90 percent throughout the upper 30 inches
Average annual soil temperature—47 to 51 degrees F

Particle-size control section (weighted average):
Clay content—40 to 50 percent
Coarse fragment content—65 to 85 percent

A horizon:
Chroma—2 or 3 dry

BA horizon:
Value—2 or 3 moist
Texture—gravelly clay loam or very gravelly clay loam
Coarse fragment content—15 to 50 percent
Clay content—27 to 36 percent

Bt horizon:
Value—3 to 5 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Coarse fragment content—65 to 90 percent
Clay content—40 to 50 percent

Jacket Series

Taxonomic class: Fine, montmorillonitic, mesic Pachic Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills on plateaus, canyon benches
Parent material: Loess
Slope range: 3 to 50 percent
Elevation: 1,200 to 4,300 feet
Climatic data (average annual):
Precipitation—22 to 26 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many fine and medium tubular pores; slightly acid (pH 6.1); clear smooth boundary.

AB—7 to 17 inches; dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and few medium roots; many fine and common medium tubular pores; neutral (pH 6.7); gradual smooth boundary.

Bt1—17 to 27 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, slightly sticky and plastic; few fine roots; common fine and medium tubular pores and few coarse vesicular pores; many faint discontinuous clay films on faces of peds and in pores; few distinct discontinuous very dark brown (10YR 2/2) organic coatings on faces of peds; neutral (pH 6.9); clear wavy boundary.

Bt2—27 to 36 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak medium and coarse prismatic structure parting to moderate fine and medium subangular blocky; very hard, very firm, sticky and plastic; few fine roots; common fine and few medium tubular pores; many distinct clay films on faces of peds and in pores; few vertically aligned black (10YR 2/1) cicada nodules; neutral (pH 7.1); gradual wavy boundary.

Bt3—36 to 56 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; very hard, very firm, sticky and plastic; few medium tubular pores; many distinct clay films on faces of peds and in pores; common fine iron and manganese concretions; mildly alkaline (pH 7.5); gradual wavy boundary.

2Bt4—56 to 63 inches; mixed strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) silty clay loam, dark brown (7.5YR 4/4) and dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; hard, friable, sticky and plastic; many fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; common fine iron and manganese concretions; 5 percent basalt gravel; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Jacket silt loam, 12 to 30 percent slopes
Location in survey area: About 3 miles southeast of Lenore, in Nez Perce County; about 2,500 feet north and 1,900 feet west of the southeast corner of sec. 7, T. 36 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 35 inches
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—35 to 50 percent
Coarse fragment content—0 to 10 percent

A and AB horizons:
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 to 3 dry or moist
Reaction—slightly acid or neutral

Bt1 horizon:
Value—4 or 5 dry
Clay content—27 to 35 percent

Bt2 and Bt3 horizons:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 50 percent
Reaction—neutral or mildly alkaline

2Bt4 horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry, 3 or 4 moist
Texture—silty clay, silty clay loam, gravelly silty clay loam, or gravelly silty clay
Coarse fragment content—0 to 25 percent
Clay content—35 to 50 percent
Reaction—neutral or mildly alkaline

Taxadjunct Feature

The base saturation of the Jacket soils in this survey area is more than 75 percent throughout, which is slightly outside the range for the series. This difference, however, does not significantly affect use and management.

Joel Series

Taxonomic class: Fine-silty, mixed, frigid Boralfic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 1 to 40 percent
Elevation: 2,300 to 4,600 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—80 to 130 days

Typical Pedon Description

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; strong medium and coarse granular structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; common fine and very fine irregular and tubular pores; slightly acid (pH 6.4); clear smooth boundary.
A2—5 to 12 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; common fine and very fine tubular pores; moderately acid (pH 5.8); clear wavy boundary.
BA—12 to 18 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; few distinct skeletans on faces of peds; moderately acid (pH 6.0); clear wavy boundary.
Bt1—18 to 24 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine and few medium roots; many fine and very fine and common medium tubular pores; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8); gradual wavy boundary.

Bt2—24 to 41 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; few fine and medium roots; common fine and very fine and few medium tubular pores; many faint dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8); clear wavy boundary.

Bt3—41 to 48 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; few fine roots; common fine and very fine and few medium tubular pores; few faint patchy clay films on faces of peds; common distinct patchy skeletans on faces of peds; moderately acid (pH 5.8); clear wavy boundary.

Btb—48 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; common fine and very fine and few medium tubular pores; common faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds and in pores; many distinct skeletans on faces of peds and in pores; moderately acid (pH 5.8).

Typical Pedon Location

Map unit in which located: Joel silt loam, 8 to 16 percent slopes

Location in survey area: About 7 miles southeast of Winchester, in Lewis County; about 215 feet south and 140 feet west of the northeast corner of sec. 10, T. 32 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 80 percent between depths of 10 and 30 inches
Average annual soil temperature—44 to 47 degrees F

Particle-size control section (weighted average):
Clay content—28 to 34 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—moderately acid to neutral

Bt horizon (upper part):
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry, 2 to 4 moist
Clay content—20 to 27 percent
Reaction—moderately acid to neutral

Bt horizon (lower part) and Btb horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent
Reaction—moderately acid to neutral

Taxadjunct Features

The Joel soils in the Joel-Setters complex, 2 to 10 percent slopes, and the Joel-Setters complex, 10 to 20 percent slopes, have higher reaction (pH) and higher base saturation in the subsoil than is typical for the Joel series. These differences, however, do not significantly affect use and management.

Johnson Series

Taxonomic class: Fine-loamy, mixed, frigid Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides, hills
Parent material: Loess, material weathered from granite
Slope range: 5 to 70 percent
Elevation: 1,000 to 4,640 feet
Climatic data (average annual):
Precipitation—22 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 120 days

Typical Pedon Description

Oi—2 inches to 0; needles.

A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; many very fine irregular pores; 7 percent fine gravel; neutral (pH 6.6); clear smooth boundary.

AB—3 to 10 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine tubular pores and common fine irregular

pores; 7 percent fine gravel; neutral (pH 6.6); gradual smooth boundary.
Bt1—10 to 21 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak fine prismatic structure; hard, friable, sticky and plastic; common very fine, fine, and medium roots and few coarse roots; many very fine tubular pores; 7 percent fine gravel; few faint discontinuous clay films on faces of peds and lining pores; organic stains on faces of peds; neutral (pH 6.8); gradual smooth boundary.
Bt2—21 to 34 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak coarse subangular blocky structure; hard, friable, very sticky and very plastic; common very fine, fine, and medium roots; common very fine tubular pores; 7 percent fine gravel; common faint and few distinct discontinuous clay films on faces of peds and common faint clay films lining pores; neutral (pH 6.8); gradual smooth boundary.
Bt3—34 to 50 inches; dark brown (7.5YR 4/4) clay loam, dark brown (7.5YR 3/4) moist; weak medium prismatic structure and weak coarse subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine tubular pores; 7 percent fine gravel; common faint discontinuous clay films on faces of peds and lining pores; neutral (pH 6.8); gradual smooth boundary.
Bt4—50 to 63 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; weak coarse and medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and fine roots; common very fine tubular pores; 7 percent fine gravel; common faint discontinuous clay films on faces of peds and lining pores; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Johnson-Dragnot association, 40 to 70 percent slopes
Location in survey area: About 12 miles northwest of Kamiah, in Lewis County; about 1,350 feet north and 1,300 feet west of the southeast corner of sec. 15, T. 35 N., R. 2 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—45 to 47 degrees F

A C horizon is in some pedons.

Particle-size control section (weighted average):
Clay content—22 to 35 percent
Gravel content—0 to 20 percent

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—clay loam, loam, gravelly clay loam, or gravelly loam
Clay content—20 to 35 percent
Gravel content—0 to 25 percent
Reaction—moderately acid to neutral

Joseph Series

Taxonomic class: Sandy-skeletal, mixed, mesic Aquic Xerofluvents

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Very rapid
Landform: Flood plains
Parent material: Alluvium derived from basalt
Slope range: 0 to 2 percent
Elevation: 750 to 2,300 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—48 to 53 degrees F
Frost-free season (32 degrees F)—120 to 180 days

Typical Pedon Description

A—0 to 10 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; 30 percent gravel and 30 percent cobbles; neutral (pH 7.2); clear smooth boundary.
C1—10 to 26 inches; grayish brown (10YR 5/2) extremely cobbly loamy coarse sand, very dark grayish brown (10YR 3/2) moist; massive; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; thin layer of extremely gravelly fine sandy loam at lower boundary; neutral (pH 7.2); abrupt smooth boundary.
C2—26 to 36 inches; grayish brown (10YR 5/2) extremely cobbly sand, very dark grayish brown

(10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 7.0); clear smooth boundary.

C3—36 to 60 inches; grayish brown (10YR 5/2) extremely gravelly coarse sand, very dark grayish brown (10YR 3/2) moist; single grain; loose, nonsticky and nonplastic; few very fine roots; many fine irregular pores; 35 percent gravel and 35 percent cobbles; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded

Location in survey area: About 1 mile north of Lapwai, in Nez Perce County; about 1,200 feet north and 2,100 feet west of the southeast corner of sec. 35, T. 36 N., R. 4 W.

Range in Characteristics

Profile:

Depth to seasonal high water table—36 to 60 inches in December through June

Frequency of flooding—occasional or frequent for long periods in December through June

Average annual soil temperature—50 to 54 degrees F

Particle-size control section (weighted average):

Clay content—0 to 5 percent

Coarse fragment content—60 to 85 percent

A horizon:

Chroma—2 or 3 dry or moist

C horizon:

Chroma—2 or 3 dry or moist

Texture—extremely gravelly sand, extremely gravelly coarse sand, extremely cobbly sand, or extremely cobbly loamy coarse sand

Kettenbach Series

Taxonomic class: Loamy-skeletal, mixed, mesic Pachic Argixerolls

Depth class: Moderately deep

Drainage class: Well drained

Permeability: Moderately slow

Landform: Canyonsides

Parent material: Colluvium derived from basalt with an influence of loess

Slope range: 35 to 90 percent

Elevation: 800 to 4,000 feet

Climatic data (average annual):

Precipitation—15 to 22 inches

Air temperature—45 to 51 degrees F

Frost-free season (32 degrees F)—120 to 160 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 4/3) stony silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 15 percent gravel and 5 percent stones; neutral (pH 7.0); clear wavy boundary.

BA—4 to 10 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, firm, sticky and plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores and few fine tubular pores; common faint clay films on faces of peds and in pores; 15 percent gravel; neutral (pH 6.6); clear wavy boundary.

Bt1—10 to 21 inches; brown (10YR 4/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak fine and medium subangular blocky structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; many very fine and fine roots and few coarse roots; many very fine and fine irregular pores and common fine tubular pores; common distinct clay films on faces of peds and in pores; 40 percent gravel; slightly acid (pH 6.3); gradual wavy boundary.

2Bt2—21 to 25 inches; dark yellowish brown (10YR 4/4) extremely gravelly silty clay loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, sticky and plastic; common fine roots; many very fine and fine irregular and tubular pores; common distinct clay films on faces of peds and in pores; 70 percent gravel and 10 percent cobbles; slightly acid (pH 6.3); clear wavy boundary.

2R1—25 to 30 inches; fractured basalt; 3 percent of fractures filled with clay; few roots.

2R2—30 inches; nonfractured basalt.

Typical Pedon Location

Map unit in which located: Kettenbach-Gwin complex, 35 to 75 percent slopes

Location in survey area: About 3 miles southeast of Peck, in Lewis County; about 1,300 feet south and 100 feet east of the northwest corner of sec. 30, T. 36 N., R. 1 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Base saturation—80 to 100 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—48 to 53 degrees F

Particle-size control section (weighted average):
Clay content—24 to 32 percent
Coarse fragment content—40 to 80 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

BA horizon, and Bt1 horizon (present only in some pedons):
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—gravelly silt loam, gravelly silty clay loam, very gravelly silt loam, or very gravelly silty clay loam
Rock fragment content—15 to 45 percent
Clay content—20 to 30 percent
Reaction—slightly acid or neutral

Bt and 2Bt horizons:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—very gravelly silt loam, very gravelly silty clay loam, extremely gravelly silty clay loam, very cobbly silty clay loam, extremely cobbly silty clay loam, or extremely gravelly clay loam
Rock fragment content—35 to 80 percent
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

Keuterville Series

Taxonomic class: Loamy-skeletal, mixed, mesic Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides, hills on plateaus, canyon benches
Parent material: Colluvium derived from basalt with some loess in the upper part
Slope range: 10 to 90 percent
Elevation: 1,200 to 3,700 feet
Climatic data (average annual):
Precipitation—20 to 24 inches
Air temperature—45 to 49 degrees F
Frost-free season (32 degrees F)—110 to 160 days

Typical Pedon Description

A—0 to 8 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; 10 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); clear smooth boundary.

AB—8 to 13 inches; dark brown (10YR 3/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; 15 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); clear wavy boundary.

Bt1—13 to 20 inches; brown (7.5YR 5/4) very gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine tubular pores; few faint patchy clay films lining pores; 40 percent gravel and 5 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.

Bt2—20 to 30 inches; brown (7.5YR 5/4) very gravelly silty clay loam, dark brown (7.5YR 4/4) moist; strong medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots and few coarse roots; many fine tubular pores; common distinct discontinuous clay films on faces of peds and lining pores; 40 percent gravel and 5 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bt3—30 to 49 inches; strong brown (7.5YR 5/6) very gravelly silty clay loam, dark brown (7.5YR 4/4) moist; strong fine and medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots; common coarse tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; 50 percent gravel and 10 percent cobbles; neutral (pH 6.6); gradual wavy boundary.

Bt4—49 to 61 inches; strong brown (7.5YR 5/6) very cobbly silty clay loam, strong brown (7.5YR

4/6) moist; strong fine and medium subangular blocky structure; hard, firm, very sticky and plastic; few fine and medium roots; common coarse tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; 10 percent gravel and 40 percent cobbles; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Keuterville-Rock outcrop complex, 35 to 90 percent slopes
Location in survey area: About 3 miles southwest of Southwick, in Nez Perce County; about 2,110 feet south and 2,640 feet east of the northwest corner of sec. 7, T. 37 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—20 to 35 percent
Coarse fragment content—35 to 50 percent

A horizon:
Hue—10YR or 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Hue—10YR, 7.5YR, or 5YR
Value—4 to 6 dry, 3 to 5 moist
Chroma—3 to 6 dry or moist
Texture—very gravelly loam, very gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam, extremely gravelly silty clay loam, or extremely gravelly clay loam
Coarse fragment content—35 to 70 percent
Reaction—slightly acid or neutral

Klickson Series

Taxonomic class: Loamy-skeletal, mixed, frigid Vitrandic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides
Parent material: Loess, colluvium derived from basalt
Slope range: 15 to 90 percent
Elevation: 1,500 to 5,300 feet
Climatic data (average annual):
Precipitation—24 to 28 inches
Air temperature—41 to 45 degrees F
Frost-free season (32 degrees F)—70 to 100 days

Typical Pedon Description

Oi—1 inch to 0; partially decomposed forest litter mixed with moss.
A—0 to 7 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 10 percent gravel; neutral (pH 6.8); gradual wavy boundary.
AB—7 to 15 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine and fine tubular pores; 20 percent gravel and 10 percent cobbles; neutral (pH 7.0); gradual wavy boundary.
Bt1—15 to 36 inches; brown (7.5YR 5/4) very cobbly silt loam, dark brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common very fine, fine, and medium roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds and lining pores; 20 percent gravel and 25 percent cobbles; slightly acid (pH 6.4); gradual wavy boundary.
Bt2—36 to 61 inches; brown (7.5YR 5/4) very cobbly silt loam, dark brown (10YR 3/4) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; few very fine, fine, and medium roots; common very fine and fine tubular pores; few faint discontinuous clay films on faces of peds and lining pores; 20 percent gravel and 35 percent cobbles; slightly acid (pH 6.4).

Typical Pedon Location

Map unit in which located: Klickson-Hooverton association, 35 to 90 percent slopes
Location in survey area: About 1.5 miles east of Reubens, in Nez Perce County; about 1,700 feet north and 2,900 feet east of the southwest corner of sec. 31, T. 35 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches

Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—43 to 47 degrees F

Upper 7 to 14 inches:
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.0 percent

Particle-size control section (weighted average):
Clay content—24 to 32 percent
Coarse fragment content—35 to 60 percent

A horizon:
Hue—10YR or 7.5YR
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry

Bt horizon (upper part):
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly or very gravelly silt loam or silty clay loam
Clay content—24 to 36 percent
Rock fragment content—35 to 60 percent
Reaction—slightly acid or neutral

Bt horizon (lower part):
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very cobbly, very gravelly, extremely gravelly, or extremely cobbly silt loam or silty clay loam
Clay content—24 to 36 percent
Rock fragment content—45 to 75 percent
Reaction—slightly acid or neutral

Kruse Series

Taxonomic class: Fine-loamy, mixed, frigid Vitrandic Haploxeralfs

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills
Parent material: Material weathered from granite with some loess in the upper part
Slope range: 10 to 40 percent
Elevation: 3,200 to 4,640 feet
Climatic data (average annual):
Precipitation—25 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 100 days

Typical Pedon Description

Oi—1 inch to 0; partially decomposed needles, twigs, cones, and moss.
A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine irregular pores; moderately acid (pH 5.8); clear smooth boundary.
EB1—3 to 9 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine tubular pores; slightly acid (pH 6.2); clear wavy boundary.
EB2—9 to 16 inches; mixed pale brown (10YR 6/3) and light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots and few medium and coarse roots; many very fine tubular pores; few faint patchy clay films on faces of peds; slightly acid (pH 6.4); clear wavy boundary.
Bt1—16 to 22 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong coarse angular blocky; hard, firm, sticky and plastic; few very fine to coarse roots, some flattened on faces of peds; common very fine tubular pores; many faint and distinct discontinuous clay films on faces of peds and lining pores; slightly acid (pH 6.4); gradual wavy boundary.
Bt2—22 to 40 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to strong coarse angular blocky; hard, firm, sticky and plastic; few very fine to coarse roots on faces of peds, some flattened; common very fine tubular pores; many faint and distinct discontinuous clay films on faces of peds and lining pores; higher content of medium and coarse sand than in horizon above; slightly acid (pH 6.4); gradual wavy boundary.
Bt3—40 to 49 inches; strong brown (7.5YR 5/6) clay loam, dark brown (7.5YR 4/4) moist; weak coarse subangular blocky structure parting to moderate thin platy; hard, firm, sticky and plastic; few very fine to coarse roots on faces of peds, some flattened; common very fine tubular pores; common faint and distinct discontinuous clay films

on faces of peds and lining pores; less than 3 percent gravel; neutral (pH 6.8); clear wavy boundary.

BC—49 to 65 inches; light brown (7.5YR 6/4) coarse sandy loam, dark brown (7.5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few very fine to coarse roots on faces of peds, some flattened; many fine irregular pores; less than 3 percent gravel; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Johnson-Kruse complex, 5 to 40 percent slopes

Location in survey area: About 1 mile northwest of Winchester, in Lewis County; about 1,150 feet north and 1,000 feet west of the southeast corner of sec. 36, T. 34 N., R. 3 W.

Range in Characteristics

Profile:
Thickness of solum—40 to 55 inches
Average annual soil temperature—45 to 46 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Reaction—moderately acid or slightly acid

EB horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist
Texture—clay loam, sandy clay loam, or loam
Clay content—24 to 34 percent
Gravel content—0 to 5 percent
Base saturation—60 to 75 percent
Reaction—slightly acid or neutral

BC horizon:
Texture—coarse sandy loam or sandy loam
Gravel content—0 to 10 percent

Labuck Series

Taxonomic class: Coarse-loamy, mixed, frigid Vitrandic Xerochrepts

Depth class: Moderately deep to a paralithic contact
Drainage class: Well drained
Permeability: Moderately rapid
Landform: Hills
Parent material: Material weathered from granodiorite
Slope range: 15 to 35 percent
Elevation: 3,700 to 4,640 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 100 days

Typical Pedon Description

A—0 to 4 inches; brown (10YR 5/3) coarse sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, nonsticky and nonplastic; many fine and very fine roots; few fine and very fine tubular pores; 10 percent fine gravel; slightly acid (pH 6.4); clear smooth boundary.

BA—4 to 15 inches; brown (10YR 5/3) coarse sandy loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; few fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 6.0); clear wavy boundary.

Bt—15 to 26 inches; light yellowish brown (10YR 6/4) fine gravelly coarse sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; few prominent discontinuous dark yellowish brown (10YR 3/4) clay films occurring as 1-centimeter-wide lamellae; 15 percent fine gravel; moderately acid (pH 5.9); clear irregular boundary.

Cr1—26 to 34 inches; multicolored, but dominantly very pale brown (10YR 7/4), weathered granodiorite; massive; few fine roots; gradual wavy boundary.

Cr2—34 to 60 inches; multicolored, but dominantly light gray (10YR 7/2), weathered granodiorite.

Typical Pedon Location

Map unit in which located: Johnson-Labuck complex, 15 to 35 percent slopes

Location in survey area: About 4 miles southeast of Winchester, in Lewis County; about 1,600 feet south and 600 feet west of the northeast corner of sec. 21, T. 33 N., R. 2 W.

Range in Characteristics

Profile:
Base saturation—60 to 75 percent
Depth to paralithic contact—20 to 40 inches
Average annual soil temperature—45 to 47 degrees F

A BC horizon is in some pedons.

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Gravel content—10 to 25 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry

BA horizon (absent in some pedons):
Value—4 or 5 dry
Texture—coarse sandy loam, fine gravelly coarse sandy loam, or fine gravelly sandy loam
Gravel content—5 to 20 percent
Clay content—8 to 16 percent
Reaction—moderately acid to neutral

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Texture—fine gravelly coarse sandy loam or fine gravelly sandy loam
Gravel content—15 to 30 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

Taxadjunct Feature

The Labuck soils in this survey area have less than 5 percent volcanic glass in the surface layer, which is slightly outside the range for the Labuck series. This difference, however, does not significantly affect use and management.

Lapwai Series

Taxonomic class: Coarse-loamy, mixed, mesic Cumulic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Stream terraces
Parent material: Alluvium derived from mixed sources
Slope range: 1 to 4 percent
Elevation: 750 to 1,200 feet
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—51 to 53 degrees F
Frost-free season (32 degrees F)—160 to 185 days

Typical Pedon Description

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak coarse granular structure parting to weak fine granular; hard, firm, sticky and slightly plastic; many very fine and fine roots; many very fine and common fine tubular pores; neutral (pH 6.8); abrupt smooth boundary.

Bw1—9 to 16 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium prismatic structure; slightly hard, friable, sticky and slightly plastic; many very fine and fine roots and common medium roots; many very fine and common fine tubular pores; neutral (pH 7.0); gradual smooth boundary.

Bw2—16 to 28 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure; soft, very friable, slightly sticky and nonplastic; common very fine, fine, and medium roots; common very fine, fine, and medium tubular pores; neutral (pH 7.1); gradual smooth boundary.

Bw3—28 to 35 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak coarse prismatic structure; soft, very friable, nonsticky and nonplastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; neutral (pH 7.3); abrupt wavy boundary.

2Bk—35 to 60 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; single grain; loose, very friable, nonsticky and nonplastic; common very fine roots; many very fine to coarse irregular pores; 30 percent gravel and 20 percent cobbles; coatings of secondary lime on coarse fragments; strongly effervescent (2 percent calcium carbonate equivalent); moderately alkaline (pH 8.0).

Typical Pedon Location

Map unit in which located: Lapwai-Bridgewater complex, 1 to 4 percent slopes
Location in survey area: About 1 mile south of Spalding, in Nez Perce County; about 1,250 feet south and 50 feet west of the northeast corner of sec. 27, T. 36 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Depth to secondary carbonates—30 to 40 inches
Average annual soil temperature—53 to 55 degrees F
Frequency of flooding—rare

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Coarse fragment content—2 to 20 percent

A horizon:
Value—2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—3 to 6 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 to 3 moist
Texture—silt loam, loam, or gravelly loam
Clay content—10 to 20 percent
Coarse fragment content—0 to 20 percent
Reaction—neutral or mildly alkaline

2Bk horizon:
Texture—very gravelly sandy loam or very gravelly loam
Coarse fragment content—35 to 50 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—mildly alkaline or moderately alkaline

Larabee Series

Taxonomic class: Loamy-skeletal, mixed, frigid Vitrandic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on high plateaus, canyonsides
Parent material: Material weathered from basalt
Slope range: 4 to 75 percent
Elevation: 3,400 to 5,300 feet
Climatic data (average annual):
Precipitation—24 to 28 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 90 days

Typical Pedon Description

A1—0 to 4 inches; brown (7.5YR 5/2) loam, dark brown (7.5YR 3/2) moist; moderate medium granular structure; soft, very friable, nonsticky and slightly plastic; many fine and medium roots; common very fine and fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.
A2—4 to 10 inches; brown (7.5YR 5/4) gravelly silt loam, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; 15 percent gravel and 5 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.
Bt1—10 to 20 inches; brown (7.5YR 5/4) very gravelly silt loam, dark brown (7.5YR 3/4) moist; strong medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; common faint patchy clay films on faces of peds; common faint patchy skeletans on faces of peds; 35 percent gravel and 10 percent cobbles; moderately acid (pH 5.8); clear wavy boundary.
Bt2—20 to 29 inches; brown (7.5YR 4/4) extremely gravelly clay loam, dark brown (7.5YR 3/4) moist; weak fine angular blocky structure; hard, firm, sticky and plastic; very few very fine roots; few very fine irregular and tubular pores; very few faint patchy clay films on faces of peds; 50 percent gravel and 35 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.
R—29 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Larabee-Zaza-Seddow complex, 10 to 40 percent slopes
Location in survey area: About 6 miles southwest of Soldiers Meadow Reservoir, in Nez Perce County; about 2,150 feet north and 2,580 feet east of the southwest corner of sec. 14, T. 32 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—50 to 75 percent
Depth to bedrock—20 to 36 inches
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Clay content—30 to 35 percent
Coarse fragment content—45 to 65 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry, 2 or 3 moist
Volcanic glass content (0.02- to 2.0-millimeter fraction)—5 to 15 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.5 percent
Reaction—moderately acid or slightly acid

Bt1 horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Texture—very gravelly silt loam, very gravelly clay loam, gravelly loam, or gravelly clay loam
Coarse fragment content—25 to 50 percent
Clay content—24 to 32 percent

Bt2 horizon:
Value—4 or 5 dry, 3 or 4 moist
Texture—extremely gravelly clay loam, extremely cobbly clay loam, or very cobbly clay loam
Coarse fragment content—40 to 85 percent
Clay content—30 to 40 percent

Larkin Series

Taxonomic class: Fine-silty, mixed, mesic Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 50 percent
Elevation: 2,300 to 3,400 feet
Climatic data (average annual):
Precipitation—22 to 24 inches
Air temperature—46 to 48 degrees F
Frost-free season (32 degrees F)—100 to 130 days

Typical Pedon Description

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, nonsticky and slightly plastic; many fine and very fine roots and common medium roots; many very fine and common medium irregular pores; neutral (pH 6.6); clear wavy boundary.

AB—8 to 15 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine irregular pores; neutral (pH 6.7); gradual wavy boundary.

BAt—15 to 19 inches; yellowish brown (10YR 5/4) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; few faint clay films on faces of peds and in pores; neutral (pH 6.8); gradual wavy boundary.

Bt1—19 to 37 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium and coarse prismatic structure parting to moderate medium angular blocky; very hard, very firm, sticky and plastic; common fine and very fine roots; many fine and very fine and few medium tubular pores; common distinct discontinuous clay films on faces of peds and in pores; irregular 1-inch-thick lamellae; common prominent skeletans on faces of peds; neutral (pH 6.6); gradual wavy boundary.

Bt2—37 to 51 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate fine and medium angular blocky; very hard, very firm, sticky and plastic; common fine and very fine roots; common fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few prominent skeletans on faces of peds; neutral (pH 6.6); gradual wavy boundary.

Bt3—51 to 61 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; few fine roots; common fine tubular pores; many prominent discontinuous clay films on faces of peds and in pores; common pockets of uncoated silt in peds; common fine iron and manganese concretions; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Southwick-Larkin complex, 12 to 25 percent slopes
Location in survey area: About 1 mile west of Cameron, in Nez Perce County; about 400 feet south and 900 feet west of the northeast corner of sec. 28, T. 38 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—48 to 50 degrees F

Particle-size control section (weighted average):
Clay content—24 to 32 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 35 percent
Reaction—slightly acid or neutral

Latah Series

Taxonomic class: Fine, mixed, mesic Xeric Argialbolls

Depth class: Very deep
Drainage class: Somewhat poorly drained

Permeability: Very slow
Landform: Flood plains
Parent material: Alluvium
Slope range: 0 to 3 percent
Elevation: 2,570 to 2,780 feet
Climatic data (average annual):
Precipitation—18 to 23 inches
Air temperature—45 to 46 degrees F
Frost-free period—110 to 135 days

Typical Pedon Description

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium granular structure; slightly sticky and slightly plastic; many roots; many very fine pores; neutral; abrupt smooth boundary.

A2—6 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; many roots; many very fine pores; neutral; clear wavy boundary.

A3—10 to 19 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; many roots; many very fine pores; neutral; clear wavy boundary.

E1—19 to 24 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine and medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common roots; common very fine pores; neutral; clear irregular boundary.

E2—24 to 30 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common roots; many very fine pores; neutral; abrupt smooth boundary.

Bt1—30 to 36 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; few fine and medium light brown (7.5YR 6/4) and light gray (2.5YR 7/2) mottles on peds; strong fine and medium subangular blocky structure; hard, very firm, sticky and plastic; some flattened roots between peds, no roots in peds; common very fine pores; prominent continuous clay films on peds; organic stains along vertical planes; neutral; clear smooth boundary.

Bt2—36 to 60 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 4/3) moist; common medium reddish yellow (7.5YR 6/6) mottles and common medium and coarse light gray (2.5YR 7/2) mottles on peds; strong fine and medium subangular blocky structure; hard, very firm, sticky and plastic; some flattened roots between peds, no roots in peds; many very fine pores; faint continuous clay films on peds; organic stains along fractures; neutral.

Typical Pedon Location

Location in adjacent survey area: About 6 miles northeast of Pullman, in Whitman County, Washington; about 2,600 feet south and 600 feet west of the northeast corner of sec. 7, T. 15 N., R. 46 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—17 to 32 inches
Depth to seasonal perched water table—6 to 30 inches in December through April
Frequency of flooding—occasional or frequent for brief periods in December through April

In some pedons, mottles are below the A1 horizon and few very fine and fine manganese concretions are in the E and Bt horizons.

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

E horizon:
Value—5 to 7 dry, 4 or 5 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 to 6 dry, 3 to 5 moist
Chroma—2 or 3 dry or moist
Texture—silty clay loam, silty clay, or clay
Clay content—35 to 60 percent
Reaction—neutral or mildly alkaline

Latahco Series

Taxonomic class: Fine-silty, mixed, frigid Argiaquic Xeric Argialbolls

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landform: Drainageways on plateaus
Parent material: Silty alluvium

Slope range: 0 to 3 percent
Elevation: 2,200 to 4,200 feet
Climatic data (average annual):
Precipitation—20 to 24 inches
Air temperature—41 to 45 degrees F
Frost-free season (32 degrees F)—100 to 135 days

Typical Pedon Description

Ap—0 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular and irregular pores; neutral (pH 6.8); clear smooth boundary.

A—13 to 22 inches; very dark gray (10YR 3/1) silt loam, black (10YR 2/1) moist; weak medium prismatic structure parting to weak coarse and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; neutral (pH 7.3); gradual smooth boundary.

E1—22 to 28 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; weak coarse subangular blocky structure; soft, very friable, slightly sticky and nonplastic; few very fine roots; common very fine tubular pores; neutral (pH 7.3); gradual smooth boundary.

E2—28 to 35 inches; white (10YR 8/1) silt loam, light brownish gray (10YR 6/2) moist; weak coarse and medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; few very fine roots; common very fine tubular pores; neutral (pH 7.3); abrupt smooth boundary.

Bt1—35 to 43 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; few fine distinct strong brown (10YR 5/6) mottles; weak fine prismatic structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; few faint patchy clay films on faces of peds and lining pores; common distinct skeletans on faces of peds; 5 percent angular basalt gravel; mildly alkaline (pH 7.4); clear smooth boundary.

Bt2—43 to 60 inches; pale brown (10YR 6/3) silty clay loam, dark brown (2.5Y 4/2) moist; common fine distinct strong brown (10YR 5/6) mottles; massive; very hard, firm, very sticky and very plastic; few very fine roots; very few very fine tubular pores; 5 percent angular basalt gravel; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Westlake-Latahco complex, 0 to 3 percent slopes
Location in survey area: About 4 miles west of Nezperce, in Lewis County; about 3,700 feet south and 500 feet west of the northeast corner of sec. 4, T. 33 N., R. 1 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—13 to 22 inches
Depth to seasonal perched water table—18 to 34 inches in February through May
Frequency of flooding—occasional for brief periods in February through April
Depth to Bt horizon—18 to 35 inches
Average annual soil temperature—43 to 47 degrees F

Particle-size control section (weighted average):
Clay content—25 to 35 percent

Ap and A horizons:
Value—3 to 5 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—slightly acid or neutral

E horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—1 or 2 dry
Reaction—slightly acid or neutral

Bt horizon:
Hue—2.5Y or 10YR
Value—4 or 5 moist
Chroma—2 or 3 dry or moist
Clay content—25 to 35 percent
Reaction—mildly alkaline or moderately alkaline

Lauby Series

Taxonomic class: Fine-loamy, mixed, mesic Pachic Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess over material weathered from granite
Slope range: 15 to 35 percent
Elevation: 2,700 to 3,400 feet

Climatic data (average annual):
Precipitation—22 to 25 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—110 to 130 days

Typical Pedon Description

Ap—0 to 6 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and plastic; few fine and very fine roots; few very fine tubular pores; moderately acid (pH 6.0); clear smooth boundary.

A—6 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; many organic stains on faces of peds; moderately acid (pH 6.0); clear wavy boundary.

AB—12 to 17 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; many very fine tubular pores; many distinct clay films on faces of peds and in pores; few faint coatings of silt on faces of peds; 5 percent gravel; neutral (pH 6.8); clear wavy boundary.

Bt—17 to 24 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate fine prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; few very fine and fine roots; common very fine tubular pores; many distinct clay films on faces of peds and in pores; few patchy coatings of silt on faces of peds; 7 percent fine gravel; neutral (pH 6.8); clear wavy boundary.

2Btb1—24 to 32 inches; light yellowish brown (10YR 6/4) clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; common very fine tubular pores; many prominent clay films on faces of peds and in pores; 7 percent fine gravel; neutral (pH 6.8); clear wavy boundary.

2Btb2—32 to 50 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure; very hard, very firm, sticky and plastic; few very fine roots; common very fine tubular pores; many prominent brown (7.5YR 5/4) clay films on faces of peds and in pores; 7 percent fine gravel; slightly acid (pH 6.5); clear irregular boundary.

2C—50 to 60 inches; very pale brown (10YR 7/4) loam, mixed yellow (10YR 7/6) and brownish yellow (10YR 6/6) moist; massive; very hard, very firm, slightly sticky and slightly plastic; common very fine tubular pores; prominent clay accumulations on faces of weathered rock fragments; many very fine mica flakes; 5 percent fine gravel; slightly acid (pH 6.5).

Typical Pedon Location

Map unit in which located: Lauby-Southwick complex, 15 to 35 percent slopes

Location in survey area: About 9 miles north of Nezperce, in Lewis County; about 2,400 feet south and 700 feet east of the northwest corner of sec. 18, T. 35 N., R. 2 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Base saturation—50 to 75 percent in some part between depths of 10 and 30 inches
Average annual soil temperature—48 to 51 degrees F

A BE horizon is in some pedons.

Particle-size control section (weighted average):
Clay content—28 to 35 percent
Coarse fragment content—0 to 10 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

Bt horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 to 4 dry or moist
Texture—silty clay loam or silt loam
Clay content—20 to 30 percent
Fine gravel content—0 to 10 percent
Reaction—slightly acid or neutral

2Btb horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry, 3 or 4 moist
Texture—silty clay loam or clay loam
Gravel content—0 to 10 percent
Clay content—28 to 37 percent
Reaction—slightly acid or neutral

2C horizon:
Texture—loam or gravelly loam
Gravel content—0 to 25 percent

Lickskillet Series

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haploxerolls

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides, hills
Parent material: Colluvium derived from basalt with a thin mantle of loess
Slope range: 15 to 75 percent
Elevation: 800 to 2,500 feet
Climatic data (average annual):
Precipitation—12 to 16 inches
Air temperature—45 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

Typical Pedon Description

A—0 to 5 inches; dark grayish brown (10YR 4/2) stony silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure parting to moderate fine and medium granular; hard, friable, sticky and plastic; many very fine and fine roots and common medium roots; many very fine and fine irregular pores; 15 percent gravel, 5 percent cobbles, and 5 percent stones; neutral (pH 7.2); clear wavy boundary.

AB—5 to 9 inches; brown (10YR 4/3) very gravelly silty clay loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine and medium granular; hard, friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine and few medium irregular pores; few faint patchy clay films on faces of peds; 30 percent gravel and 20 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Bt—9 to 13 inches; brown (10YR 5/3) very gravelly silty clay loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; hard, friable, sticky and plastic; many very fine and fine roots and common medium and coarse roots; common very fine and fine and few medium irregular pores; common faint patchy clay films on faces of peds and lining pores; 50 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.

Btk—13 to 16 inches; yellowish brown (10YR 5/4) extremely gravelly silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine subangular blocky structure; hard, friable, sticky and plastic; common fine and medium roots; common very fine and fine and few medium irregular pores; slightly effervescent, disseminated lime; 70 percent gravel; mildly alkaline (pH 7.6); clear wavy boundary.

R—16 inches; fractured basalt; coatings of lime on some rock fragments.

Typical Pedon Location

Map unit in which located: Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes
Location in survey area: About 1 mile north of Lewiston, in Nez Perce County; about 1,600 feet north and 1,000 feet west of the southeast corner of sec. 16, T. 36 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—7 to 15 inches
Depth to bedrock—12 to 20 inches
Average annual soil temperature—47 to 54 degrees F

Particle-size control section (weighted average):
Clay content—23 to 33 percent
Rock fragment content—35 to 70 percent

A horizon:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bt and Btk horizons:
Hue—10YR or 7.5YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very gravelly or extremely gravelly loam, silty clay loam, or clay loam
Clay content—23 to 33 percent
Rock fragment content—50 to 70 percent
Reaction—neutral to moderately alkaline

Limekiln Series

Taxonomic class: Loamy-skeletal, mixed, mesic Lithic Haploxerolls

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides
Parent material: Loess, colluvium derived from basalt
Slope range: 40 to 60 percent
Elevation: 750 to 2,600 feet
Climatic data (average annual):
Precipitation—13 to 16 inches

Air temperature—51 to 54 degrees F
Frost-free season (32 degrees F)—140 to 190 days

Typical Pedon Description

A—0 to 8 inches; brown (10YR 5/3) very stony silt loam, very dark grayish brown (10YR 3/2) moist; strong fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; 3 percent stones, 10 percent cobbles, and 25 percent gravel; neutral (pH 7.2); clear smooth boundary.

Bk1—8 to 13 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; strongly effervescent (15 percent calcium carbonate equivalent); disseminated lime and coatings of lime on many rock fragments; 10 percent cobbles and 30 percent gravel; moderately alkaline (pH 8.0); clear smooth boundary.

Bk2—13 to 16 inches; very pale brown (10YR 7/3) extremely gravelly silt loam, brown (10YR 5/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; common very fine and fine roots; common very fine and fine tubular pores; violently effervescent (46 percent calcium carbonate equivalent); disseminated lime and coatings of lime on many rock fragments; 30 percent cobbles and 35 percent gravel; moderately alkaline (pH 8.4); abrupt wavy boundary.

2R—16 inches; basalt.

Typical Pedon Location

Map unit in which located: Limekiln very stony silt loam, 40 to 60 percent slopes

Location in survey area: About 5 miles south of Lewiston, in Nez Perce County; 900 feet north and 1,150 feet east of the southwest corner of sec. 5, T. 34 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 16 inches
Depth to calcic horizon—7 to 12 inches
Depth to bedrock—12 to 20 inches
Average annual soil temperature—53 to 56 degrees F

Particle-size control section (weighted average):
Rock fragment content—50 to 70 percent

A horizon:
Value—4 or 5 dry
Reaction—neutral or mildly alkaline

Bk1 horizon:
Rock fragment content—35 to 55 percent
Clay content—18 to 24 percent
Calcium carbonate equivalent—15 to 25 percent

Bk2 horizon:
Value—6 or 7 dry, 4 or 5 moist
Texture—extremely gravelly silt loam, extremely cobbly silt loam, or very cobbly silt loam
Rock fragment content—50 to 75 percent
Clay content—18 to 24 percent
Calcium carbonate equivalent—30 to 50 percent
Reaction—moderately alkaline or strongly alkaline

Linville Series

Taxonomic class: Fine-loamy, mixed, mesic Pachic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills, canyonsides
Parent material: Loess, colluvium derived from basalt
Slope range: 25 to 75 percent
Elevation: 800 to 2,800 feet
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—46 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

Typical Pedon Description

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and very fine granular structure; slightly hard, friable, slightly sticky and nonplastic; many fine and very fine roots; many very fine to medium tubular pores; 7 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—3 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak thin and very thin platy structure; slightly hard, friable, slightly sticky and nonplastic; many fine and very fine roots; many fine and very fine tubular pores; 7 percent gravel; neutral (pH 7.2); clear smooth boundary.

A3—6 to 19 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic;

common fine and very fine roots; many very fine and common fine tubular pores; 10 percent gravel; mildly alkaline (pH 7.4); gradual smooth boundary.

AB—19 to 31 inches; dark grayish brown (10YR 4/2) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; common very fine tubular pores; common organic coatings on faces of peds; 25 percent gravel; mildly alkaline (pH 7.4); diffuse wavy boundary.

Bt1—31 to 48 inches; brown (10YR 5/3) gravelly silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common fine and very fine tubular and irregular pores; very few distinct patchy clay films on faces of peds; common organic coatings on faces of peds; 25 percent gravel; mildly alkaline (pH 7.4); clear wavy boundary.

Bt2—48 to 67 inches; brown (10YR 5/3) gravelly silt loam, dark brown (10YR 3/3) moist; moderate medium and fine subangular blocky structure; hard, friable, sticky and plastic; common very fine roots; common fine and very fine tubular and irregular pores; common distinct patchy clay films on faces of peds; 20 percent gravel and 10 percent cobbles; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Linville-Kettenbach association, 45 to 75 percent slopes

Location in survey area: About 3 miles northeast of Spalding, in Nez Perce County; about 1,230 feet south and 150 feet west of the northeast corner of sec. 13, T. 36 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 48 inches
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—20 to 27 percent
Coarse fragment content—5 to 30 percent

A and AB horizons:
Value—2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Coarse fragment content—15 to 30 percent
Clay content—20 to 27 percent
Reaction—mildly alkaline or moderately alkaline

Mallory Series

Taxonomic class: Clayey-skeletal, montmorillonitic, mesic Pachic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills, canyonsides
Parent material: Colluvium derived from basalt
Slope range: 20 to 40 percent
Elevation: 3,000 to 4,300 feet
Climatic data (average annual):
Precipitation—22 to 25 inches
Air temperature—46 to 47 degrees F
Frost-free season (32 degrees F)—110 to 130 days

Typical Pedon Description

A—0 to 7 inches; very dark grayish brown (10YR 3/2) very stony loam, very dark brown (10YR 2/2) moist; weak very fine and fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.5); clear smooth boundary.

Bt1—7 to 15 inches; dark brown (10YR 3/3) very gravelly clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; many very fine and fine roots; common very fine and fine irregular pores; 40 percent gravel and 10 percent cobbles; neutral (pH 6.7); clear wavy boundary.

Bt2—15 to 25 inches; brown (7.5YR 4/4) extremely gravelly clay, dark brown (7.5YR 3/3) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic; common very fine and fine roots; few very fine and fine tubular pores; few distinct continuous clay films on faces of peds; 50 percent gravel and 15 percent cobbles; neutral (pH 6.8); clear wavy boundary.

Bt3—25 to 34 inches; brown (7.5YR 5/4) extremely gravelly clay loam, brown (7.5YR 4/4) moist; moderate fine and medium subangular blocky structure; hard, firm, very sticky and very plastic;

few fine roots; few very fine and fine tubular pores; common distinct continuous clay films on faces of peds; 60 percent gravel and 25 percent cobbles; neutral (pH 6.8); clear wavy boundary.
R—34 inches; basalt; fractures 4 to 18 inches apart.

Typical Pedon Location

Map unit in which located: Mallory-Jacket complex, 10 to 40 percent slopes
Location in survey area: About 1 mile south of Waha, in Nez Perce County; about 2,010 feet south and 2,450 feet west of the northeast corner of sec. 17, T. 33 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Depth to bedrock—20 to 40 inches
Base saturation—75 to 90 percent
Average annual soil temperature—47 to 48 degrees F

Particle-size control section (weighted average):
Clay content—38 to 45 percent
Coarse fragment content—50 to 75 percent

A horizon:
Chroma—2 or 3 dry
Reaction—slightly acid or neutral

Bt1 horizon:
Value—3 or 4 dry or moist
Chroma—2 or 3 dry or moist
Rock fragment content—40 to 60 percent
Clay content—28 to 40 percent
Reaction—slightly acid or neutral

Bt2 and Bt3 horizons:
Hue—7.5YR or 10YR
Value—3 or 4 dry or moist
Chroma—2 to 4 dry or moist
Texture—extremely gravelly clay or extremely gravelly clay loam
Rock fragment content—60 to 90 percent
Clay content—36 to 45 percent
Reaction—slightly acid or neutral

Maloney Series

Taxonomic class: Fine-loamy, mixed, frigid Typic Xerochrepts

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus
Parent material: Material weathered from basalt with loess mixed in the upper part
Slope range: 5 to 20 percent
Elevation: 4,400 to 5,350 feet
Climatic data (average annual):
Precipitation—25 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 90 days

Typical Pedon Description

A—0 to 5 inches; dark yellowish brown (10YR 4/4) fine gravelly silt loam, dark brown (7.5YR 3/2) moist; strong fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common fine and very fine tubular and irregular pores; 25 percent gravel, dominantly fine gravel; slightly acid (pH 6.4); clear smooth boundary.
Bw1—5 to 12 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium and coarse subangular blocky structure parting to strong coarse granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common fine and medium tubular and irregular pores; 20 percent gravel, dominantly fine gravel; slightly acid (pH 6.2); clear wavy boundary.
Bw2—12 to 18 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium and coarse subangular blocky structure parting to strong coarse granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots and few medium roots; common fine and medium tubular and irregular pores; 20 percent gravel, dominantly fine gravel; moderately acid (pH 6.0); gradual smooth boundary.
Bw3—18 to 25 inches; dark yellowish brown (10YR 4/6) fine gravelly silt loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and medium tubular and irregular pores; 25 percent gravel, dominantly fine gravel, and 5 percent cobbles; slightly acid (pH 6.2); abrupt irregular boundary.
2R—25 inches; basalt.

Typical Pedon Location

Map unit in which located: Maloney-Zaza complex, 5 to 20 percent slopes
Location in survey area: About 3 miles southeast of Soldiers Meadow Reservoir, in Nez Perce County; about 2,600 feet south and 2,170 feet

west of the northeast corner of sec. 9, T. 32 N., R. 3 W.

Range in Characteristics

Profile:
Volcanic glass content—0 to 5 percent
Depth to bedrock—22 to 36 inches
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Coarse fragment content—10 to 35 percent
Clay content—18 to 24 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry, 2 to 4 moist

Bw horizon:
Hue—5YR, 7.5YR, or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry
Texture—fine gravelly silt loam, fine gravelly loam, or silt loam
Clay content—18 to 24 percent
Gravel content—10 to 25 percent, dominantly fine gravel
Cobble content—0 to 10 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

Meland Series

Taxonomic class: Fine-loamy, mixed, mesic Ultic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus, canyon benches
Parent material: Loess, material weathered from basalt
Slope range: 5 to 25 percent
Elevation: 1,500 to 3,700 feet
Climatic data (average annual):
Precipitation—20 to 24 inches
Air temperature—45 to 50 degrees F
Frost-free season (32 degrees F)—110 to 160 days

Typical Pedon Description

Ap—0 to 10 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium and coarse subangular blocky structure parting to weak fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and few fine tubular pores; moderately acid (pH 6.0); clear wavy boundary.

Bt1—10 to 16 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine and few fine roots; common very fine and few fine tubular pores; few faint clay films on faces of peds and in pores; 5 percent gravel; slightly acid (pH 6.5); gradual wavy boundary.

Bt2—16 to 35 inches; pale brown (10YR 6/3) gravelly silty clay loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine tubular pores; common faint clay films on faces of peds and in pores; 20 percent gravel; slightly acid (pH 6.5); abrupt irregular boundary.

R—35 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Meland-Jacket complex, 5 to 20 percent slopes
Location in survey area: About 1.5 miles northeast of Lenore, in Nez Perce County; about 15 feet south and 20 feet east of the northwest corner of sec. 25, T. 37 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—15 to 20 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 52 degrees F

Particle-size control section (weighted average):
Coarse fragment content—5 to 25 percent

Ap horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 dry or moist
Chroma (lower part)—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—10YR or 7.5YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture (upper part)—silt loam or silty clay loam
Texture (lower part)—gravelly silty clay loam, gravelly clay loam, or clay loam
Clay content—24 to 35 percent
Coarse fragment content—0 to 25 percent

Mohler Series

Taxonomic class: Fine-silty, mixed, mesic Pachic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 4 to 10 percent
Elevation: 3,200 to 3,700 feet
Climatic data (average annual):
Precipitation—22 to 23 inches
Air temperature—44 to 46 degrees F
Frost-free season (32 degrees F)—105 to 120 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; moderate coarse granular structure; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and fine tubular and irregular pores; moderately acid (pH 6.0); abrupt wavy boundary.

A1—7 to 11 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; moderate coarse prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and few fine tubular pores; neutral (pH 6.7); clear wavy boundary.

A2—11 to 17 inches; brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; moderate coarse prismatic structure parting to weak fine prismatic; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and fine tubular pores; neutral (pH 6.9); clear wavy boundary.

A3—17 to 23 inches; brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; weak medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine tubular and irregular pores and common fine tubular pores; neutral (pH 7.2); abrupt wavy boundary.

Bt1—23 to 29 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine and few medium tubular pores; few faint discontinuous clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; discontinuous clay lamellae 2 to 5 millimeters thick; neutral (pH 7.2); clear smooth boundary.

Bt2—29 to 41 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to weak fine prismatic; hard, friable, slightly sticky and slightly plastic; few very fine roots; many very fine tubular and irregular pores and common fine tubular pores; few faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; neutral (pH 7.3); clear wavy boundary.

Bt3—41 to 50 inches; light yellowish brown (10YR 6/4) silty clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine prismatic; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; common prominent discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; mildly alkaline (pH 7.4); clear wavy boundary.

Bt4—50 to 68 inches; brown (7.5YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate medium prismatic; hard, firm, slightly sticky and slightly plastic; few very fine roots; common very fine and fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and as pockets in peds; wavy dark brown (7.5YR 4/4) clay lamellae that are 5 to 10 millimeters thick and are oriented horizontally; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes
Location in survey area: About 3 miles northeast of Craigmont, in Lewis County; about 340 feet north and 1,980 feet west of the southeast corner of sec. 26, T. 34 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—24 to 30 inches
Base saturation—75 to 95 percent between depths of 10 and 30 inches
Average annual soil temperature—47 to 49 degrees F

Particle-size control section (weighted average):
Clay content—25 to 32 percent

A horizon:
Chroma—2 or 3 dry, 1 or 2 moist (1 moist in upper part only)
Reaction—moderately acid to neutral

Bt1 horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 34 percent
Reaction—slightly acid or neutral

Bt2, Bt3, and Bt4 horizons, and Btb horizon (present in some pedons):
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—28 to 35 percent
Reaction—neutral or mildly alkaline

Naff Series

Taxonomic class: Fine-silty, mixed, mesic Ultic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 40 percent
Elevation: 1,800 to 2,800 feet
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—130 to 160 days

Typical Pedon Description

Ap—0 to 10 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse granular structure parting to weak medium and fine granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores; slightly acid (pH 6.2); clear smooth boundary.

AB—10 to 18 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine irregular pores; slightly acid (pH 6.3); gradual wavy boundary.

Bt1—18 to 25 inches; light yellowish brown (10YR 6/4) silty clay loam, brown (10YR 4/3) moist; moderate medium angular blocky structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; many very fine and fine roots; many very fine and fine tubular pores; many distinct discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.3); gradual wavy boundary.

Bt2—25 to 29 inches; pale brown (10YR 6/3) silty clay loam, dark brown (10YR 4/3) moist; moderate medium angular blocky structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; many fine roots; many very fine and fine tubular pores; many prominent yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt3—29 to 37 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; moderate coarse prismatic structure parting to moderate coarse and medium angular blocky; very hard, very firm, sticky and plastic; many fine roots; many very fine and fine tubular pores; many prominent discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.4); gradual wavy boundary.

Bt4—37 to 46 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium prismatic and strong medium and coarse angular blocky; many fine roots; many very fine and fine tubular pores; many prominent discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; slightly acid (pH 6.3); gradual smooth boundary.

Bt5—46 to 55 inches; brownish yellow (10YR 6/6) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium and coarse angular blocky; hard, firm, sticky and plastic; few fine roots; many very fine and fine tubular pores; many distinct discontinuous yellowish red (5YR 5/6) clay films

lining pores and on faces of peds; slightly acid (pH 6.3); gradual smooth boundary.

Bt6—55 to 60 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse angular blocky structure; hard, firm, sticky and plastic; very few fine roots; many very fine and fine tubular pores; common distinct discontinuous yellowish red (5YR 5/6) clay films lining pores and on faces of peds; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Naff-Palouse complex, 8 to 20 percent slopes

Location in survey area: About 1 mile south of Genesee, in Nez Perce County; about 1,320 feet south and 2,640 feet west of the northeast corner of sec. 23, T. 37 N., R. 5 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon—10 to 20 inches

Organic matter content in mollic epipedon (weighted average)—2 to 3 percent

Average annual soil temperature—49 to 52 degrees F

Particle-size control section (weighted average):

Clay content—30 to 35 percent

A horizon:

Value—4 or 5 dry, 2 or 3 moist

Chroma—1 or 2 dry

Reaction—slightly acid or neutral

Bt horizon (upper part):

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Texture—silty clay loam or silt loam

Clay content—26 to 35 percent

Reaction—slightly acid or neutral

Bt horizon (lower part):

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 to 5 moist

Chroma—3 to 6 dry or moist

Clay content—30 to 35 percent

Reaction—slightly acid to mildly alkaline

Nez Perce Series

Taxonomic class: Fine, montmorillonitic, mesic Xeric Argialbolls

Depth class: Very deep

Drainage class: Moderately well drained

Permeability: Slow

Landform: Hills on plateaus

Parent material: Loess

Slope range: 1 to 20 percent

Elevation: 2,600 to 4,100 feet

Climatic data (average annual):

Precipitation—20 to 24 inches

Air temperature—44 to 48 degrees F

Frost-free season (32 degrees F)—100 to 140 days

Typical Pedon Description

Ap1—0 to 3 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; weak very fine and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine to coarse irregular pores and few fine to coarse tubular pores; moderately acid (pH 5.7); clear smooth boundary.

Ap2—3 to 11 inches; dark grayish brown (10YR 4/2) silty clay loam, black (10YR 2/1) moist; weak medium and fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; few fine and very fine tubular pores; moderately acid (pH 5.9); clear smooth boundary.

Bw—11 to 15 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; common fine and very fine roots; common very fine tubular pores; many continuous distinct dark grayish brown (10YR 4/2) organic coatings on faces of peds; neutral (pH 6.7); clear smooth boundary.

E—15 to 21 inches; light brownish gray (10YR 6/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine prismatic structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; few fine rounded iron and manganese concretions; neutral (pH 7.1); abrupt smooth boundary.

Btb1—21 to 26 inches; brown (10YR 4/3) silty clay, dark brown (10YR 3/3) moist; weak fine and very fine prismatic structure; very hard, very firm, very sticky and very plastic; common fine and very fine roots; common very fine tubular pores; few distinct patchy light brownish gray (10YR 6/2) skeletans on faces of peds; many distinct continuous clay films on faces of peds; many distinct continuous dark grayish brown (10YR 4/2) organic coatings on faces of peds; few fine rounded iron and manganese concretions; mildly alkaline (pH 7.6); clear smooth boundary.

Btb2—26 to 31 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak fine and very fine prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; few distinct discontinuous intersecting slickensides on horizontal faces of peds; few distinct patchy light brownish gray (10YR 6/2) skeletans on vertical faces of peds; many distinct continuous clay films on faces of peds; few fine rounded iron and manganese concretions; moderately alkaline (pH 8.3); clear smooth boundary.

Btkb1—31 to 43 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak coarse prismatic structure; very hard, very firm, very sticky and very plastic; common very fine roots; common very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (15 percent calcium carbonate equivalent); few fine filaments of lime; strongly alkaline (pH 8.5); gradual smooth boundary.

Btkb2—43 to 53 inches; brown (10YR 5/3) silty clay, dark brown (10YR 4/3) moist; weak coarse prismatic structure; very hard, very firm, very sticky and very plastic; few very fine roots; few very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (13 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.8); gradual smooth boundary.

Btkb3—53 to 66 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; weak coarse prismatic structure; hard, friable, very sticky and plastic; few very fine roots; few very fine tubular pores; common distinct discontinuous pressure faces on horizontal faces of peds; few fine rounded iron and manganese concretions; strongly effervescent (12 percent calcium carbonate equivalent); disseminated lime and few fine filaments of lime; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Uhlorn-Nez Perce complex, 2 to 10 percent slopes

Location in survey area: About 3 miles east of Craigmont, in Lewis County; about 1,600 feet south and 100 feet west of the northeast corner of sec. 2, T. 33 N., R. 1 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon and depth to E horizon—12 to 20 inches

Organic matter content in mollic epipedon (weighted average)—3 to 6 percent

Depth to seasonal perched water table—12 to 20 inches in February through April

Depth to argillic horizon—14 to 27 inches

Depth to secondary carbonates—26 to 40 inches

Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):

Clay content—40 to 55 percent

A horizon:

Value—3 or 4 dry

Chroma—1 or 2 dry or moist

Reaction—moderately acid to neutral

Bw horizon, and BA and AB horizons (present in some pedons):

Value—4 or 5 dry, 2 or 3 moist

Chroma—2 or 3 dry, 1 to 3 moist

Clay content—16 to 24 percent

Reaction—slightly acid or neutral

E horizon:

Value—6 or 7 dry, 4 or 5 moist

Chroma—1 or 2 dry

Texture—silt loam or silt

Clay content—10 to 20 percent

Reaction—slightly acid or neutral

Btb horizon:

Hue—7.5YR or 10YR

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Clay content—40 to 55 percent

Reaction—neutral to moderately alkaline

Btkb horizon:

Hue—7.5YR or 10YR

Value—5 to 7 dry, 4 to 6 moist

Chroma—2 to 4 dry or moist

Texture—silty clay or silty clay loam

Gravel content—0 to 3 percent

Clay content—30 to 55 percent

Calcium carbonate equivalent—5 to 20 percent

Sodium adsorption ratio—3 to 10

Reaction—moderately alkaline or strongly alkaline

Oliphant Series

Taxonomic class: Coarse-silty, mixed, mesic Calcic Pachic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus
Parent material: Loess, colluvium derived from basalt
Slope range: 1 to 40 percent
Elevation: 1,200 to 2,600 feet
Climatic data (average annual):
Precipitation—13 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure parting to strong coarse granular; soft, friable, nonsticky and nonplastic; common medium, fine, and very fine roots; common very fine tubular pores; neutral (pH 6.6); abrupt smooth boundary.

A—7 to 16 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; common fine and very fine roots; common fine and very fine tubular pores; neutral (pH 7.0); clear wavy boundary.

Bw1—16 to 24 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); gradual wavy boundary.

Bw2—24 to 29 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; weak coarse and medium subangular blocky structure; soft, friable, nonsticky and nonplastic; few fine and very fine roots; many fine and very fine tubular pores; mildly alkaline (pH 7.6); clear wavy boundary.

Bk1—29 to 39 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; weak very coarse subangular blocky structure; soft, friable, nonsticky and nonplastic; very few very fine roots; common fine and very fine tubular pores; strongly effervescent; disseminated lime and few fine filaments of lime; moderately alkaline (pH 8.0); clear wavy boundary.

Bk2—39 to 62 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common very fine tubular pores; violently effervescent; disseminated lime; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Oliphant silt loam, 1 to 4 percent slopes
Location in survey area: In the eastern part of Lewiston Orchards, in Nez Perce County; about 100 feet north and 2,620 feet east of the southwest corner of sec. 10, T. 35 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 26 inches
Depth to calcic horizon—26 to 36 inches
Depth to very gravelly substratum—40 to 60 inches or more
Average annual soil temperature—52 to 54 degrees F

Particle-size control section (weighted average):
Clay content—14 to 18 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bw1 horizon:
Chroma—3 or 4 dry
Clay content—12 to 18 percent
Reaction—mildly alkaline or moderately alkaline

Bw2 horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—12 to 18 percent
Reaction—mildly alkaline or moderately alkaline

Bk horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 or 3 dry or moist
Calcium carbonate equivalent—15 to 30 percent
Reaction—moderately alkaline or strongly alkaline

2Bk horizon (present in some pedons):
Texture—gravelly silt loam or very gravelly silt loam

Palouse Series

Taxonomic class: Fine-silty, mixed, mesic Pachic Ultic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 20 percent
Elevation: 1,800 to 2,900 feet

Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—47 to 51 degrees F
Frost-free season (32 degrees F)—130 to 160 days

Typical Pedon Description

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine and common medium tubular pores and common very fine irregular pores; slightly acid (pH 6.5); clear smooth boundary.

A—8 to 15 inches; dark brown (10YR 4/3) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium and coarse roots; many very fine and fine and common medium tubular pores; many vertical worm channels filled with darker material; neutral (pH 7.1); clear wavy boundary.

AB—15 to 27 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; many vertical worm channels filled with darker material; neutral (pH 7.2); clear wavy boundary.

Bt1—27 to 40 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and slightly plastic; many very fine and fine roots and few medium roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; common skeletans on faces of peds; many vertical worm channels filled with darker material; neutral (pH 7.3); gradual wavy boundary.

Bt2—40 to 50 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, firm, sticky and slightly plastic; common very fine and fine roots; many very fine and fine and common medium tubular pores; few faint patchy clay films on faces of peds; common skeletans on faces of peds; many vertical worm channels filled with darker material; neutral (pH 7.3); gradual wavy boundary.

Bt3—50 to 63 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine and few medium tubular pores; few faint patchy clay films on faces of peds; few skeletans on faces of peds; many vertical worm channels filled with darker material; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Palouse-Athena complex, 8 to 20 percent slopes

Location in survey area: About 3 miles northwest of Spalding, in Nez Perce County; about 2,040 feet south and 2,640 feet west of the northeast corner of sec. 9, T. 36 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Base saturation—75 to 90 percent between depths of 10 and 30 inches
Average annual soil temperature—49 to 52 degrees F

Particle-size control section (weighted average):
Clay content—20 to 27 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 to 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

Bt horizon (upper part):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—20 to 27 percent

Bt horizon (lower part):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 30 percent
Reaction—neutral or mildly alkaline

Taxadjunct Feature

The base saturation of the Palouse soils in this survey area is slightly outside the range for the series. This difference, however, does not significantly affect use and management.

Redmore Series

Taxonomic class: Fine, montmorillonitic, mesic Typic Natrixerolls

Depth class: Deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess, material weathered from basalt
Slope range: 1 to 6 percent
Elevation: 2,450 to 2,800 feet
Climatic data (average annual):
Precipitation—16 to 18 inches
Air temperature—49 to 50 degrees F
Frost-free season (32 degrees F)—130 to 140 days

Typical Pedon Description

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak coarse angular blocky structure parting to moderate fine subangular blocky; slightly hard, friable, nonsticky and slightly plastic; many very fine and fine roots; few very fine tubular pores; strongly acid (pH 5.3); clear smooth boundary.

A—8 to 12 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; common very fine and fine roots; common very fine tubular pores; moderately acid (pH 5.7); abrupt wavy boundary.

Btn1—12 to 16 inches; very dark grayish brown (10YR 3/2) silty clay, black (10YR 2/1) moist, dark brown (10YR 4/3) dry and crushed, very dark grayish brown (10YR 3/2) moist and crushed; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and very fine roots; few very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds; many black (10YR 2/1) organic coatings on faces of peds; 9 percent exchangeable sodium; mildly alkaline (pH 7.7); clear wavy boundary.

Btn2—16 to 19 inches; brown (10YR 4/3) silty clay loam, dark brown (10YR 3/3) moist, yellowish brown (10YR 5/4) and dark yellowish brown (10YR 3/4) moist and crushed; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and very fine roots; common very fine tubular pores; many distinct discontinuous clay films on faces of peds; common black (10YR 2/1) organic coatings on faces of peds; 11 percent exchangeable sodium; strongly alkaline (pH 8.6); clear wavy boundary.

Btkn—19 to 28 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, sticky and plastic; few fine and very fine roots; common very fine tubular pores; common faint and distinct discontinuous clay films on faces of peds; slightly effervescent disseminated lime and strongly effervescent common fine filaments of lime (3 percent calcium carbonate equivalent); 15 percent exchangeable sodium; strongly alkaline (pH 8.6); clear wavy boundary.

Bkn1—28 to 35 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 4/3) moist; weak fine prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; slightly effervescent disseminated lime and violently effervescent fine and medium filaments of lime (4 percent calcium carbonate equivalent); 5 percent gravel; 13 percent exchangeable sodium; strongly alkaline (pH 8.9); clear wavy boundary.

2Bkn2—35 to 42 inches; white (10YR 8/2) silt loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and slightly plastic; many fine and very fine tubular pores; violently effervescent disseminated lime (40 percent calcium carbonate equivalent); 5 percent gravel and indurated durinodes; 25 percent exchangeable sodium; strongly alkaline (pH 8.8); clear wavy boundary.

2Bkqn—42 to 46 inches; white (10YR 8/2) very gravelly loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and slightly plastic; many fine and very fine tubular pores; violently effervescent disseminated lime (80 percent calcium carbonate equivalent); 30 percent gravel and 10 percent cobbles, including basalt fragments and indurated durinodes; 23 percent exchangeable sodium; strongly alkaline (pH 8.6); abrupt wavy boundary.

2Bkqm—46 to 60 inches; white (10YR 8/2) indurated duripan, brown (10YR 5/3) moist; very thick platy structure with lenses of loamy soil material between plates; extremely hard, extremely firm; violently effervescent disseminated lime; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Redmore silt loam, 1 to 6 percent slopes
Location in survey area: About 10 miles southeast of Lewiston, in Nez Perce County; about 2,420 feet north and 900 feet east of the southwest corner of sec. 25, T. 34 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—15 to 20 inches
Depth to natric horizon—8 to 16 inches
Depth to Bkn horizon—20 to 30 inches
Depth to duripan—40 to 55 inches
Average annual soil temperature—47 to 48 degrees F

Particle-size control section (weighted average):
Clay content—35 to 45 percent

A horizon:
Chroma—1 or 2 moist
Reaction—strongly acid to slightly acid

Btn horizon:
Value—3 to 5 dry, 2 to 4 moist
Chroma—1 to 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—30 to 45 percent
Sodium adsorption ratio—5 to 12
Exchangeable sodium percentage—8 to 20
Reaction—mildly alkaline to strongly alkaline

Btkn horizon:
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—26 to 35 percent
Sodium adsorption ratio—10 to 20
Exchangeable sodium percentage—15 to 30
Reaction—strongly alkaline or very strongly alkaline

Bkn horizon:
Value—5 to 8 dry, 4 to 6 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—26 to 35 percent
Gravel content—0 to 10 percent
Sodium adsorption ratio—10 to 20
Exchangeable sodium percentage—10 to 30
Reaction—strongly alkaline or very strongly alkaline

2Bkn horizon:
Texture—silt loam or loam
Clay content—14 to 25 percent
Gravel content—0 to 10 percent
Reaction—strongly alkaline or very strongly alkaline

2Bkqn horizon (absent in some pedons):
Coarse fragment content—30 to 55 percent

Seddow Series

Taxonomic class: Fine-loamy, mixed, frigid Vitrandic Haploxeralfs

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on high plateaus
Parent material: Volcanic ash, loess, material weathered from basalt
Slope range: 5 to 40 percent
Elevation: 4,200 to 5,300 feet
Climatic data (average annual):
Precipitation—26 to 28 inches
Air temperature—41 to 44 degrees F
Frost-free season (32 degrees F)—60 to 85 days

Typical Pedon Description

Oi—1 inch to 0; moss, needles, and twigs.
A—0 to 4 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine irregular and tubular pores; less than 3 percent gravel; moderately acid (pH 5.8); clear smooth boundary.
E/B—4 to 8 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and medium roots and few coarse roots; common fine and very fine tubular pores; less than 5 percent gravel; strongly acid (pH 5.2); clear wavy boundary.
B/E—8 to 13 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and medium roots and few coarse roots; common fine and very fine tubular pores; 5 percent gravel; strongly acid (pH 5.2); clear wavy boundary.
2Bt1—13 to 21 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 3/4) moist, dark yellowish brown (10YR 4/4) moist and crushed; moderate medium and coarse subangular blocky structure parting to strong fine angular blocky; hard, friable, sticky and plastic; common fine and medium roots and few coarse roots; few fine and very fine tubular pores; few faint discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; many prominent discontinuous pale brown (10YR 6/3) skeletans on faces of peds; 5 percent gravel; strongly acid (pH 5.3); clear wavy boundary.
3Bt2—21 to 29 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark yellowish brown

(10YR 3/4) moist, yellowish brown (10YR 5/6) dry and crushed, dark yellowish brown (10YR 4/4) moist and crushed; moderate medium subangular blocky structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few fine and medium roots; few fine tubular pores; many distinct continuous dark yellowish brown (10YR 4/4) clay films on faces of peds; few prominent patchy pale brown (10YR 6/3) skeletans on faces of peds; 20 percent gravel and 10 percent cobbles; moderately acid (pH 5.6); clear wavy boundary.

3Bt3—29 to 48 inches; dark yellowish brown (10YR 4/4) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist, yellowish brown (10YR 5/6) dry and crushed; weak fine and medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots matted around stones; common prominent discontinuous dark yellowish brown (10YR 4/4) clay films on faces of peds; 30 percent gravel and 40 percent cobbles; moderately acid (pH 6.0); clear wavy boundary.

3R—48 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Seddow silt loam, 10 to 40 percent slopes

Location in survey area: About 1/4 mile east of Soldiers Meadow Dam, in Nez Perce County; about 550 feet north and 1,550 feet west of the southeast corner of sec. 29, T. 33 N., R. 3 W.

Range in Characteristics

Profile:
Depth to argillic horizon—6 to 14 inches
Depth to skeletal material—28 to 36 inches
Depth to bedrock—40 to 55 inches
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Clay content—30 to 35 percent
Coarse fragment content—10 to 35 percent

Upper 7 to 14 inches:
Volcanic glass content—5 to 30 percent
Acid-oxalate extractable Al plus 1/2 Fe—0.4 to 1.2 percent
Sand and coarse silt content—30 to 45 percent

A horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 2 or 3 moist
Chroma—3 or 4 dry, 2 to 4 moist
Reaction—moderately acid or slightly acid

E/B and B/E horizons:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Clay content—14 to 24 percent
Gravel content—0 to 10 percent
Reaction—strongly acid or moderately acid

2Bt1 and 3Bt2 horizons:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—silty clay loam, gravelly clay loam, gravelly silt loam, or silt loam
Clay content—24 to 38 percent
Coarse fragment content—5 to 35 percent
Base saturation—50 to 75 percent
Reaction—strongly acid or moderately acid

3Bt3 horizon:
Hue—7.5YR or 10YR
Value—4 or 5 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—extremely cobbly clay loam, very cobbly clay loam, or extremely gravelly clay loam
Clay content—35 to 40 percent
Coarse fragment content—40 to 75 percent
Reaction—moderately acid or slightly acid

Setters Series

Taxonomic class: Fine, montmorillonitic, frigid Ultic Palexerolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus, canyon benches
Parent material: Loess
Slope range: 2 to 15 percent
Elevation: 2,300 to 4,300 feet
Climatic data (average annual):
Precipitation—23 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

Typical Pedon Description

Ap—0 to 8 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; many

very fine to medium tubular pores; slightly acid (pH 6.4); clear smooth boundary.

AB—8 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; many fine and very fine tubular pores; slightly acid (pH 6.4); gradual smooth boundary.

Bt—12 to 17 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; few faint clay films in pores; many distinct very pale brown (10YR 7/3) skeletans on faces of peds; slightly acid (pH 6.4); gradual smooth boundary.

E—17 to 19 inches; light brownish gray (10YR 6/2) silt loam, grayish brown (10YR 5/2) moist; many fine and medium prominent strong brown (7.5YR 5/6) mottles; weak medium platy structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; slightly acid (pH 6.3); abrupt smooth boundary.

Btb1—19 to 29 inches; brown (10YR 5/3) silty clay, brown (10YR 4/3) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots, some flattened between peds; many fine and very fine tubular pores; many prominent clay films on faces of peds and in pores; common slickensides on faces of peds; few fine rounded iron and manganese concretions; slightly acid (pH 6.2); gradual wavy boundary.

Btb2—29 to 49 inches; pale brown (10YR 6/3) silty clay, brown (10YR 4/3) moist; strong medium and coarse prismatic structure; very hard, very firm, very sticky and very plastic; few fine and very fine roots, some flattened against peds; many fine and very fine tubular pores; common slickensides on faces of peds; many prominent clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 7.0); gradual wavy boundary.

Btb3—49 to 61 inches; pale brown (10YR 6/3) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; hard, firm, very sticky and very plastic; few fine and very fine roots; common fine and very fine tubular pores; many prominent clay films on faces of peds and in pores; few fine rounded iron and manganese concretions; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Taney-Setters complex, 3 to 8 percent slopes

Location in survey area: About 2 miles south of Reubens, in Lewis County; about 50 feet north and 1,300 feet east of the southwest corner of sec. 11, T. 34 N., R. 2 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon—11 to 18 inches

Depth to seasonal perched water table—14 to 22 inches in February through April

Depth to Btb horizon—18 to 24 inches

Average annual soil temperature—44 to 47 degrees F

Particle-size control section (weighted average):

Clay content—40 to 45 percent

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Reaction—strongly acid to slightly acid

Bt horizon:

Value—4 to 6 dry, 3 or 4 moist

Chroma—3 or 4 dry or moist

Clay content—15 to 26 percent

Reaction—slightly acid or neutral

E horizon:

Value—6 or 7 dry, 5 or 6 moist

Chroma—2 dry or moist

Clay content—15 to 20 percent

Reaction—moderately acid or slightly acid

Btb horizon:

Hue—10YR or 7.5YR

Value—4 to 6 dry, 3 or 4 moist

Chroma—2 to 4 dry, 3 or 4 moist

Texture—silty clay or silty clay loam

Clay content—35 to 50 percent

Base saturation—65 to 75 percent in some part of the upper 20 inches

Reaction—moderately acid to neutral

Taxadjunct Feature

The E horizon in the Setters soils in this survey area has chroma of 2, which is outside the range for the series. This difference, however, does not significantly affect use and management.

Shilla Series

Taxonomic class: Ashy over loamy-skeletal, mixed, frigid Alfic Vitrixerands

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on high plateaus
Parent material: Volcanic ash over material weathered from basalt
Slope range: 2 to 30 percent
Elevation: 4,400 to 5,300 feet
Climatic data (average annual):
Precipitation—26 to 28 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 70 days

Typical Pedon Description

Oi—1 inch to 0; slightly decomposed needles, moss, and twigs.
A—0 to 1 inch; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots and few medium roots; few very fine and fine tubular pores; slightly acid (pH 6.3); abrupt smooth boundary.
Bw1—1 inch to 9 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; 5 percent fine gravel; moderately acid (pH 6.0); gradual smooth boundary.
Bw2—9 to 16 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; soft, very friable, nonsticky and slightly plastic; common fine and very fine roots and few medium roots; common very fine tubular pores; 5 percent fine gravel; moderately acid (pH 5.9); abrupt irregular boundary.
2Btb1—16 to 24 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; many distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; 10 percent gravel; moderately acid (pH 5.9); clear wavy boundary.
2Btb2—24 to 31 inches; light yellowish brown (10YR 6/4) very gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and few medium roots; many fine and very fine tubular pores; common distinct discontinuous dark yellowish brown (10YR 4/6) clay films on faces of peds; 45 percent gravel and 15 percent cobbles; neutral (pH 6.7); gradual wavy boundary.
2Btb3—31 to 53 inches; yellowish brown (10YR 5/6) extremely cobbly clay loam, dark yellowish brown (10YR 4/4) moist; moderate fine and very fine angular blocky structure; hard, friable, sticky and plastic; few fine roots matted around stones; common fine and very fine tubular pores; 35 percent gravel and 55 percent cobbles; slightly acid (pH 6.2); clear irregular boundary.
2R—53 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Shilla silt loam, 2 to 12 percent slopes
Location in survey area: About 3 miles north of Zaza, in Nez Perce County; about 545 feet south and 2,600 feet east of the northwest corner of sec. 21, T. 32 N. R. 4 W.

Range in Characteristics

Profile:
Depth to bedrock—40 to 60 inches
Average annual soil temperature—43 to 45 degrees F

Ash mantle:
Thickness—14 to 20 inches
Volcanic glass content (0.02- to 2.0-millimeter fraction)—25 to 45 percent
Acid-oxalate extractable Al plus ½ Fe—0.6 to 2.0 percent
Moist bulk density—0.75 to 0.90 gram per centimeter
15-bar water retention—8 to 12 percent

Lower part of particle-size control section (weighted average):
Clay content—28 to 34 percent
Coarse fragment content—45 to 60 percent

A horizon:
Value—4 or 5 dry, 2 to 4 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

Bw horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Gravel content (fragments dominantly 2 to 5 millimeters in diameter)—0 to 10 percent

Clay content (field estimate)—10 to 15 percent
Reaction—moderately acid or slightly acid

2Btb horizon (upper part):
Texture—loam, cobbly loam, clay loam, or cobbly clay loam
Coarse fragment content—10 to 25 percent
Clay content—24 to 30 percent
Reaction—moderately acid or slightly acid

2Btb horizon (lower part):
Hue—7.5YR or 10YR
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—very cobbly clay loam, very gravelly clay loam, extremely gravelly clay loam, or extremely cobbly clay loam
Rock fragment content—40 to 90 percent
Clay content—28 to 38 percent
Reaction—moderately acid to neutral

Slickpoo Series

Taxonomic class: Fine-loamy, mixed, mesic Calcic Pachic Argixerolls

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess, material weathered from basalt
Slope range: 5 to 25 percent
Elevation: 1,600 to 2,900 feet
Climatic data (average annual):
Precipitation—15 to 18 inches
Air temperature—49 to 52 degrees F
Frost-free season (32 degrees F)—140 to 180 days

Typical Pedon Description

Ap—0 to 12 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine tubular pores; slightly acid (pH 6.1); clear smooth boundary.
BA—12 to 17 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine roots; common very fine and fine tubular pores; very few faint patchy clay films on faces of peds; neutral (pH 6.6); gradual wavy boundary.
Bt1—17 to 22 inches; yellowish brown (10YR 5/4) silty clay loam, dark brown (10YR 3/3) moist; weak medium angular blocky structure; hard, friable, sticky and plastic; common very fine roots; common very fine and fine tubular pores; common faint discontinuous clay films on faces of peds; neutral (pH 7.2); clear wavy boundary.
2Bt2—22 to 32 inches; yellowish brown (10YR 5/4) cobbly silty clay loam, dark yellowish brown (10YR 3/4) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; common very fine roots; many very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds; 10 percent gravel and 15 percent cobbles; mildly alkaline (pH 7.4); clear wavy boundary.
2Btk—32 to 37 inches; yellowish brown (10YR 5/4) cobbly silty clay loam, brown (10YR 4/3) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; few very fine roots; many very fine and fine tubular pores; few faint patchy clay films in pores; slightly effervescent; few fine filaments of lime; 10 percent gravel and 20 percent cobbles; mildly alkaline (pH 7.8); clear wavy boundary.
2Bk—37 to 45 inches; light gray (10YR 7/2) very cobbly silt loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine tubular pores; violently effervescent; disseminated lime; 20 percent gravel and 40 percent cobbles; moderately alkaline (pH 8.4); abrupt wavy boundary.
3R—45 inches; basalt.

Typical Pedon Location

Map unit in which located: Slickpoo silt loam, 5 to 15 percent slopes
Location in survey area: About 1 mile northwest of Waha, in Nez Perce County; about 1,900 feet south and 20 feet west of the northeast corner of sec. 6, T. 33 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 28 inches
Depth to secondary carbonates—28 to 35 inches
Depth to bedrock—40 to 55 inches
Average annual soil temperature—51 to 54 degrees F

Ap horizon:
Value—3 or 4 dry
Chroma—1 or 2 dry or moist

Bt horizon:
Value—4 or 5 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture—silt loam or silty clay loam
Clay content—22 to 32 percent
Gravel content—0 to 10 percent
Reaction—neutral or mildly alkaline

2Bt horizon, and 2Btk horizon (absent in some pedons):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—28 to 36 percent
Coarse fragment content—15 to 35 percent
Reaction—neutral or mildly alkaline

2Bk horizon:
Value—6 to 8 dry, 5 or 6 moist
Chroma—2 to 4 dry or moist
Texture—very cobbly silt loam or very cobbly loam
Clay content—20 to 27 percent
Coarse fragment content—35 to 60 percent

Southwick Series

Taxonomic class: Fine-silty, mixed, mesic Boralfic Argixerolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Moderate in the upper part and very slow in the lower part
Landform: Hills on plateaus
Parent material: Loess
Slope range: 3 to 30 percent
Elevation: 2,300 to 3,400 feet
Climatic data (average annual):
Precipitation—23 to 25 inches
Air temperature—45 to 47 degrees F
Frost-free season (32 degrees F)—100 to 130 days

Typical Pedon Description

Ap1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate very thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; many wormcasts; moderately acid (pH 5.8); clear smooth boundary.

Ap2—5 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; many wormcasts; moderately acid (pH 5.9); gradual smooth boundary.

BA—9 to 15 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure; hard, firm, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; many wormcasts; slightly acid (pH 6.2); gradual wavy boundary.

Bt1—15 to 20 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many wormcasts; slightly acid (pH 6.3); gradual wavy boundary.

Bt2—20 to 26 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, firm, slightly sticky and slightly plastic; common very fine and fine roots; many very fine and fine tubular pores; common distinct discontinuous clay films on faces of peds and in pores; many wormcasts; slightly acid (pH 6.3); gradual wavy boundary.

EB—26 to 28 inches; pale brown (10YR 6/3) silt loam, dark grayish brown (10YR 4/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few very fine and fine roots; many very fine and fine tubular pores; few faint patchy clay films on faces of peds; slightly acid (pH 6.3); gradual wavy boundary.

E—28 to 32 inches; light gray (10YR 7/2) silt loam, brown (10YR 5/3) moist; common fine prominent mottles that are olive yellow (2.5Y 6/8) moist; weak medium and thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; many fine and medium manganese concretions; firm, somewhat brittle layer 1 inch thick at lower boundary; slightly acid (pH 6.1); abrupt smooth boundary.

Btxb1—32 to 35 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure; extremely hard, extremely firm, sticky and plastic; very dense and brittle; common very fine and fine flattened roots matted between faces of prisms; common very fine and fine tubular pores plugged with clay; many prominent clay films on faces of peds and in pores; many prominent continuous skeletans on faces of peds and in pores; many fine pockets of uncoated silt in peds; common prominent very

dark brown (10YR 2/2) organic coatings on faces of prisms; moderately acid (pH 5.9); gradual smooth boundary.

Btxb2—35 to 46 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 4/3) moist; strong coarse prismatic structure parting to strong medium and coarse angular blocky; extremely hard, extremely firm, sticky and plastic; very dense and brittle; common very fine and fine flattened roots matted between faces of prisms; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many prominent continuous skeletans on faces of peds and in pores; many fine pockets of uncoated silt in peds; many fine and medium manganese concretions; moderately acid (pH 5.9); gradual wavy boundary.

Btb1—46 to 54 inches; yellowish brown (10YR 5/4) silty clay loam, brown (10YR 4/3) moist; strong coarse angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine roots; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many fine and medium manganese concretions; slightly acid (pH 6.4); gradual wavy boundary.

Btb2—54 to 64 inches; yellowish brown (10YR 5/4) silty clay loam, light yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, very firm, sticky and plastic; few very fine and fine tubular pores; many prominent dark brown (7.5YR 4/4) clay films on faces of peds and lining pores; many fine and medium manganese concretions; many black coatings of manganese on faces of peds; neutral (pH 6.9).

Typical Pedon Location

Map unit in which located: Southwick-Driscoll complex, 3 to 12 percent slopes (fig. 26)

Location in survey area: About 1 mile east of Gifford, in Nez Perce County; about 1,400 feet south and 600 feet east of the northwest corner of sec. 25, T. 36 N., R. 2 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon—20 to 30 inches

Depth to seasonal perched water table—20 to 36 inches in February through April

Depth to Btxb horizon—29 to 36 inches

Average annual soil temperature—47 to 49 degrees F

Particle-size control section (weighted average):

Clay content—28 to 34 percent

Ap horizon:

Value—3 or 4 dry, 2 or 3 moist

Chroma—2 or 3 dry or moist

Clay content—18 to 26 percent

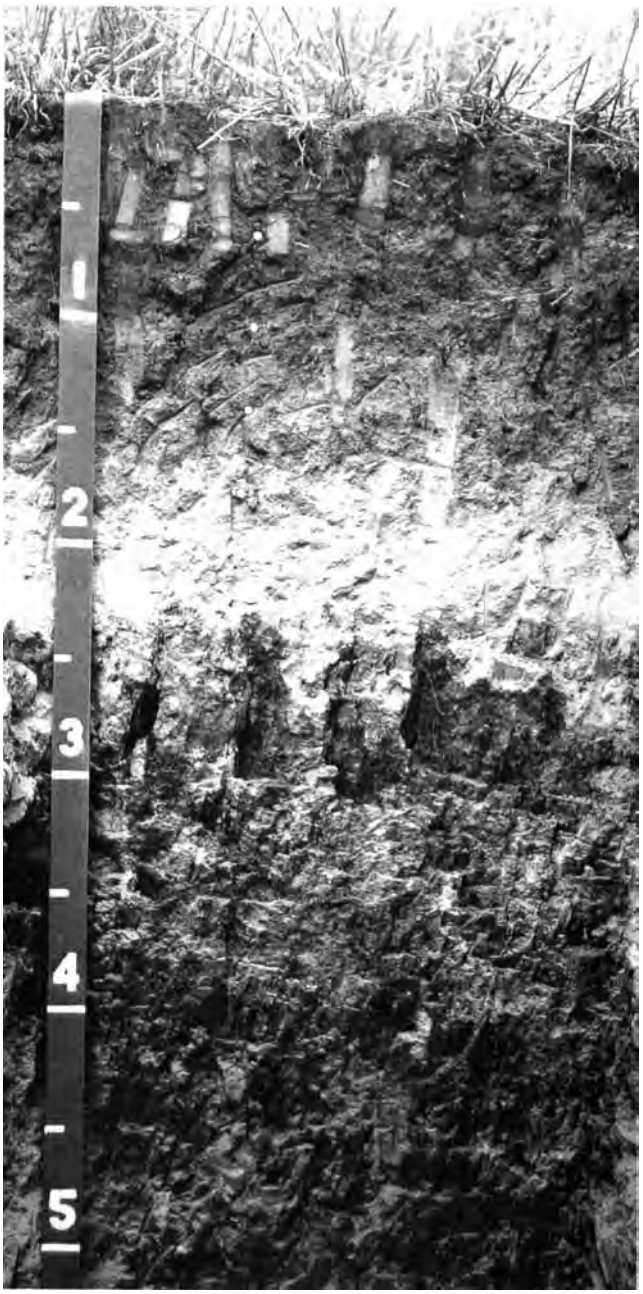


Figure 26.—A profile of Southwick silt loam in an area of Southwick-Driscoll complex, 3 to 12 percent slopes. In spring a water table is perched above the dense subsoil, which is at a depth of about 28 inches (numerals on tape indicate feet).

Reaction—moderately acid to neutral

Bt horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry
Clay content—20 to 27 percent
Base saturation—60 to 75 percent
Reaction—moderately acid or slightly acid

E horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist
Clay content—12 to 20 percent
Base saturation—70 to 80 percent
Reaction—moderately acid to neutral

Btxb horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Clay content—27 to 34 percent
Bulk density—1.60 to 1.70 grams per centimeter
Base saturation—70 to 80 percent
Reaction—moderately acid or slightly acid

Btb horizon:
Hue—7.5YR or 10YR
Value—5 to 7 dry, 4 or 5 moist
Chroma—3 or 4 moist
Clay content—30 to 38 percent
Reaction—moderately acid to neutral

Stember Series

Taxonomic class: Loamy-skeletal, mixed, mesic Typic Calcixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on plateaus
Parent material: Loess, material weathered from basalt
Slope range: 8 to 15 percent
Elevation: 1,400 to 2,600 feet
Climatic data (average annual):
Precipitation—14 to 16 inches
Air temperature—50 to 52 degrees F
Frost-free season (32 degrees F)—160 to 180 days

Typical Pedon Description

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; slightly effervescent (trace of calcium carbonate equivalent); disseminated lime; 5 percent gravel and 3 percent cobbles; moderately alkaline (pH 8.0); abrupt smooth boundary.

A—6 to 9 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common very fine tubular pores; slightly effervescent (trace of calcium carbonate equivalent); disseminated lime; 5 percent gravel and 3 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

Bk—9 to 13 inches; brown (10YR 5/3) very gravelly silt loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine tubular pores; strongly effervescent (23 percent calcium carbonate equivalent); disseminated lime and coatings of lime on coarse fragments; 25 percent gravel and 15 percent cobbles; moderately alkaline (pH 8.0); clear smooth boundary.

2Bkq1—13 to 18 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common fine tubular pores; strongly effervescent (42 percent calcium carbonate equivalent); lime is disseminated and in common fine soft masses and coatings on coarse fragments; 30 percent gravel, including less than 5 percent indurated durinodes, and 15 percent cobbles; strongly alkaline (pH 8.5); clear irregular boundary.

2Bkq2—18 to 30 inches; white (10YR 8/2) extremely cobbly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; common very fine tubular pores; violently effervescent (45 percent calcium carbonate equivalent); lime is disseminated and as coatings on coarse fragments; soil material on top of coarse fragments and in narrow spaces between coarse fragments is weakly cemented, hard, and firm and very firm; 35 percent gravel, including 20 percent indurated durinodes, and 35 percent cobbles; strongly alkaline (pH 8.5); abrupt wavy boundary.

3R—30 inches; lime-coated, fractured basalt.

Typical Pedon Location

Map unit in which located: Oliphant-Stember complex, 8 to 20 percent slopes
Location in survey area: About 1 mile south of the Lewiston-Nez Perce County Airport, in Nez Perce County; about 740 feet north and 310 feet west of the southeast corner of sec. 31, T. 35 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—12 to 20 inches
Depth to calcic horizon—9 to 20 inches
Depth to bedrock—20 to 35 inches
Average annual soil temperature—52 to 54 degrees F

Particle-size control section (weighted average):
Clay content—19 to 22 percent
Coarse fragment content—35 to 65 percent

A horizon:
Value—4 or 5 dry

Bk horizon:
Texture—very gravelly silt loam or gravelly silt loam
Coarse fragment content—30 to 45 percent
Clay content—18 to 25 percent
Calcium carbonate equivalent—15 to 30 percent

2Bkq horizon:
Value—6 to 8 dry, 5 to 7 moist
Chroma—2 or 3 dry or moist
Texture—very gravelly loam or extremely cobbly loam
Coarse fragment content—40 to 70 percent
Clay content—18 to 23 percent
Calcium carbonate equivalent—20 to 50 percent

Sweiting Series

Taxonomic class: Fine, montmorillonitic, frigid Pachic Ultic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess, material weathered from basalt
Slope range: 4 to 20 percent
Elevation: 4,000 to 4,500 feet
Climatic data (average annual):
Precipitation—22 to 26 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—80 to 100 days

Typical Pedon Description

Ap—0 to 8 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate fine and medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; many fine and very fine tubular pores; moderately acid (pH 5.8); abrupt smooth boundary.
A—8 to 12 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse and medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine and very fine roots; many very fine and fine tubular pores; slightly acid (pH 6.4); clear wavy boundary.
Bt1—12 to 17 inches; brown (10YR 5/3) silty clay loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, sticky and plastic; common very fine and fine roots; common very fine and fine tubular pores; many faint discontinuous clay films on faces of peds; common prominent discontinuous skeletans on faces of peds; 2 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
Bt2—17 to 23 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to strong fine angular blocky; hard, firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many faint discontinuous clay films on faces of peds; many prominent discontinuous skeletans on faces of peds; 10 percent gravel; slightly acid (pH 6.4); clear wavy boundary.
2Bt3—23 to 31 inches; light yellowish brown (10YR 6/4) very gravelly clay, dark yellowish brown (10YR 4/4) moist; moderate medium and fine subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots; common faint discontinuous clay films on faces of peds; many pressure faces; 40 percent gravel and 10 percent cobbles; neutral (pH 6.8); gradual wavy boundary.
2R—31 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Sweiting-Joel complex, 4 to 20 percent slopes
Location in survey area: About 3 miles northwest of Morrow, in Lewis County; about 600 feet north and 770 feet west of the southeast corner of sec. 2, T. 32 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 28 inches

Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Coarse fragment content—10 to 35 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—moderately acid or slightly acid

Bt horizon:
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Gravel content—0 to 15 percent
Clay content—27 to 40 percent

2Bt horizon:
Value—5 or 6 dry
Texture—very gravelly clay, very gravelly silty clay, or gravelly clay
Coarse fragment content—20 to 55 percent
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

Talmaks Series

Taxonomic class: Fine-silty, mixed, frigid Vitrandic Haploxeralfs

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess mixed with volcanic ash in the upper part
Slope range: 2 to 20 percent
Elevation: 4,200 to 4,750 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—42 to 43 degrees F
Frost-free season (32 degrees F)—60 to 80 days

Typical Pedon Description

A—0 to 3 inches; brown (10YR 5/3) silt loam, very dark brown (10YR 2/2) moist; strong medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; slightly acid (pH 6.5); clear smooth boundary.
BA—3 to 7 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; common very fine tubular pores; moderately acid (pH 5.9); clear wavy boundary.
EB—7 to 11 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; few faint patchy skeletans on faces of peds; moderately acid (pH 5.9); clear wavy boundary.
BE—11 to 16 inches; yellowish brown (10YR 5/4) silt loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds; few faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 5.7); clear wavy boundary.
Bt1—16 to 26 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; slightly hard, friable, sticky and plastic; few fine and medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds; few faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 5.9); diffuse wavy boundary.
Bt2—26 to 36 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to strong fine and medium angular blocky; slightly hard, friable, sticky and plastic; few fine and medium roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; common faint patchy skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear irregular boundary.
B/Eb—36 to 47 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; common distinct patchy clay films on faces of peds; common clay lamellae; many prominent continuous pale brown (10YR 6/3) skeletans on

faces of peds and in pores; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear irregular boundary.

Btb1—47 to 57 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; common prominent discontinuous brownish yellow (10YR 6/6) clay films on faces of peds; common clay lamellae; common prominent discontinuous pale brown (10YR 6/3) skeletans on faces of peds and in pores; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); clear wavy boundary.

2Btb2—57 to 70 inches; brown (7.5YR 5/4) silty clay loam, brown (7.5YR 4/4) moist; moderate fine and medium angular blocky structure; hard, friable, sticky and plastic; few fine roots; many fine and very fine tubular pores; many prominent discontinuous brownish yellow (10YR 6/6) clay films on faces of peds; 10 percent gravel; few fine rounded iron and manganese concretions; moderately acid (pH 5.9).

Typical Pedon Location

Map unit in which located: Talmaks silt loam, 2 to 8 percent slopes

Location in survey area: About 11 miles south of Winchester, in Lewis County; about 20 feet south and 2,630 feet east of the northwest corner of sec. 34, T. 32 N., R. 2 W.

Range in Characteristics

Profile:
Depth to argillic horizon—12 to 24 inches
Number of dry days (soil moisture control section)—45 to 60
Average annual soil temperature—44 to 45 degrees F

Upper 7 to 14 inches:
Volcanic glass content—5 to 15 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.2 percent

Particle-size control section (weighted average):
Clay content—24 to 32 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

EB and BE horizons:
Clay content—18 to 24 percent
Reaction—moderately acid or slightly acid

Bt horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—silt loam or silty clay loam
Clay content—24 to 36 percent
Base saturation—55 to 75 percent
Reaction—moderately acid or slightly acid

Btb horizon:
Hue—7.5YR or 10YR
Value—5 or 6 dry
Clay content—28 to 40 percent
Gravel content—0 to 10 percent
Reaction—moderately acid or slightly acid

Tammany Series

Taxonomic class: Loamy-skeletal, mixed, mesic Calcic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate in the upper part and very rapid in the substratum
Landform: Dissected alluvial terraces
Parent material: Alluvium derived from mixed sources over gravelly alluvium derived from granitic rock
Slope range: 20 to 65 percent
Elevation: 750 to 1,200 feet
Climatic data (average annual):
Precipitation—12 to 15 inches
Air temperature—51 to 53 degrees F
Frost-free season (32 degrees F)—160 to 190 days

Typical Pedon Description

A1—0 to 4 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 10 percent gravel; neutral (pH 7.2); clear smooth boundary.

A2—4 to 10 inches; brown (10YR 4/3) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; many fine and very fine roots; many fine and very fine tubular pores; 30 percent gravel and 10 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bw—10 to 17 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure;

slightly hard, friable, slightly sticky and plastic; common fine and very fine roots; common very fine tubular pores; 40 percent gravel and 15 percent cobbles; neutral (pH 7.2); clear wavy boundary.

Bk—17 to 29 inches; pale brown (10YR 6/3) extremely gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; weak coarse subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine and very fine roots; few very fine tubular pores; 45 percent gravel and 25 percent cobbles; strongly effervescent (10 percent calcium carbonate equivalent); disseminated lime and coatings of lime on underside of coarse fragments; moderately alkaline (pH 8.2); clear wavy boundary.

2C—29 to 60 inches; light gray (10YR 7/2) extremely gravelly coarse sand, light brownish gray (10YR 6/2) moist; single grain; loose, nonsticky and nonplastic; many fine irregular pores; 50 percent gravel and 30 percent cobbles; slightly effervescent; disseminated lime; moderately alkaline (pH 8.0).

Typical Pedon Location

Map unit in which located: Chard-Tammany complex, 20 to 45 percent slopes

Location in survey area: About 1 mile north of Lewiston, in Nez Perce County; about 600 feet south and 1,100 feet west of the northeast corner of sec. 29, T. 36 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—8 to 14 inches
Depth to secondary carbonates—15 to 30 inches
Depth to 2C horizon—25 to 40 inches
Average annual soil temperature—55 to 57 degrees F

Particle-size control section (weighted average):
Clay content—8 to 16 percent
Coarse fragment content—50 to 75 percent

A horizon:
Value—4 or 5 dry
Chroma—2 or 3 dry or moist
Reaction—neutral or mildly alkaline

Bw horizon:
Chroma—3 or 4 dry or moist
Texture—very gravelly loam or very gravelly sandy loam
Coarse fragment content—35 to 60 percent
Clay content—14 to 22 percent
Reaction—neutral or mildly alkaline

Bk horizon:
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam, or extremely cobbly loam
Coarse fragment content—50 to 85 percent
Clay content—8 to 16 percent
Calcium carbonate equivalent—5 to 15 percent

2C horizon:
Value—7 or 8 dry, 6 or 7 moist
Coarse fragment content—60 to 90 percent

Taney Series

Taxonomic class: Fine-silty, mixed, frigid Vitrandic Argixerolls

Depth class: Moderately deep to a fragipan
Drainage class: Moderately well drained
Permeability: Moderate above the fragipan and very slow through the fragipan
Landform: Hills on plateaus, canyon benches
Parent material: Loess
Slope range: 3 to 30 percent
Elevation: 2,300 to 4,000 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine to medium roots; few fine and very fine tubular pores; tillage pan at a depth of 3 to 7 inches; strongly acid (pH 5.2); gradual wavy boundary.

BA—7 to 14 inches; dark brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; many wormcasts; moderately acid (pH 5.8); clear smooth boundary.

Bt—14 to 18 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, firm, slightly

sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; common faint discontinuous clay films on faces of peds and in pores; many fine iron and manganese concretions; many worm channels and wormcasts; moderately acid (pH 6.0); gradual wavy boundary.

BE—18 to 23 inches; pale brown (10YR 6/3) silt loam, brown (10YR 4/3) moist; common fine prominent olive yellow (2.5Y 6/6) mottles; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; many fine and very fine tubular pores; few faint patchy clay films on faces of peds and in pores; many fine iron and manganese concretions; moderately acid (pH 6.0); gradual wavy boundary.

E1—23 to 27 inches; very pale brown (10YR 7/3) silt loam, brown (10YR 5/3) moist; common fine prominent olive yellow (2.5Y 6/6) mottles; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; slightly acid (pH 6.1); clear smooth boundary.

E2—27 to 29 inches; white (10YR 8/2) silt loam, brown (10YR 5/3) moist; many fine prominent olive yellow (2.5Y 6/6) mottles; weak thin and medium platy structure; soft, friable, slightly sticky and slightly plastic; few fine and very fine roots; common fine and very fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.

Btxb—29 to 36 inches; light yellowish brown (10YR 6/4) silt loam, brown (10YR 4/3) moist; strong coarse and very coarse prismatic structure; very hard, very firm and brittle, sticky and plastic; common fine and very fine roots matted on faces of prisms and very few very fine roots in peds; few fine and medium tubular pores; many prominent clay films on faces of peds and in pores; many prominent very dark brown (10YR 2/2) organic coatings on faces of peds; many fine iron and manganese concretions; moderately acid (pH 5.9); clear smooth boundary.

Btb1—36 to 38 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong thick platy; very hard, very firm and brittle, sticky and plastic; few fine and very fine roots matted on faces of prisms; few fine and very fine tubular pores; many prominent brown (7.5YR 4/4) clay films on faces of peds and in pores; common pockets of uncoated silt in peds; many fine iron and manganese concretions; moderately acid (pH 5.9); gradual wavy boundary.

Btb2—38 to 50 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong thick platy structure parting to strong medium angular blocky; very hard, very firm, sticky and plastic; few fine and very fine roots flattened on faces of peds; few fine and very fine tubular pores; many distinct brown (7.5YR 4/4) clay films on faces of peds and in pores; few prominent discontinuous skeletans on faces of peds; many fine iron and manganese concretions; moderately acid (pH 6.0); gradual irregular boundary.

Btb3—50 to 63 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; hard, firm, slightly sticky and plastic; few fine and very fine tubular pores; many distinct brown (7.5YR 5/4) clay films on faces of peds and in pores; many fine iron and manganese concretions; neutral (pH 6.6).

Typical Pedon Location

Map unit in which located: Taney-Setters complex, 3 to 8 percent slopes (fig. 27)

Location in survey area: About 3 miles north of Reubens, in Nez Perce County; about 1,780 feet north and 800 feet east of the southwest corner of sec. 13, T. 35 N., R. 2 W.

Range in Characteristics

Profile:

Thickness of mollic epipedon—12 to 18 inches

Depth to seasonal perched water table—23 to 30 inches in February through April

Depth to fragipan—27 to 36 inches

Average annual soil temperature—44 to 47 degrees F

Particle-size control section (weighted average):

Clay content—18 to 20 percent

A horizon:

Value—3 to 5 dry, 2 or 3 moist

Chroma—2 or 3 dry, 1 to 3 moist

Reaction—strongly acid to slightly acid

Bt horizon, and Bw horizon (present in some pedons):

Value—4 to 6 dry, 3 to 5 moist

Chroma—3 or 4 dry or moist

Clay content—18 to 27 percent

Base saturation—60 to 75 percent

Reaction—moderately acid or slightly acid

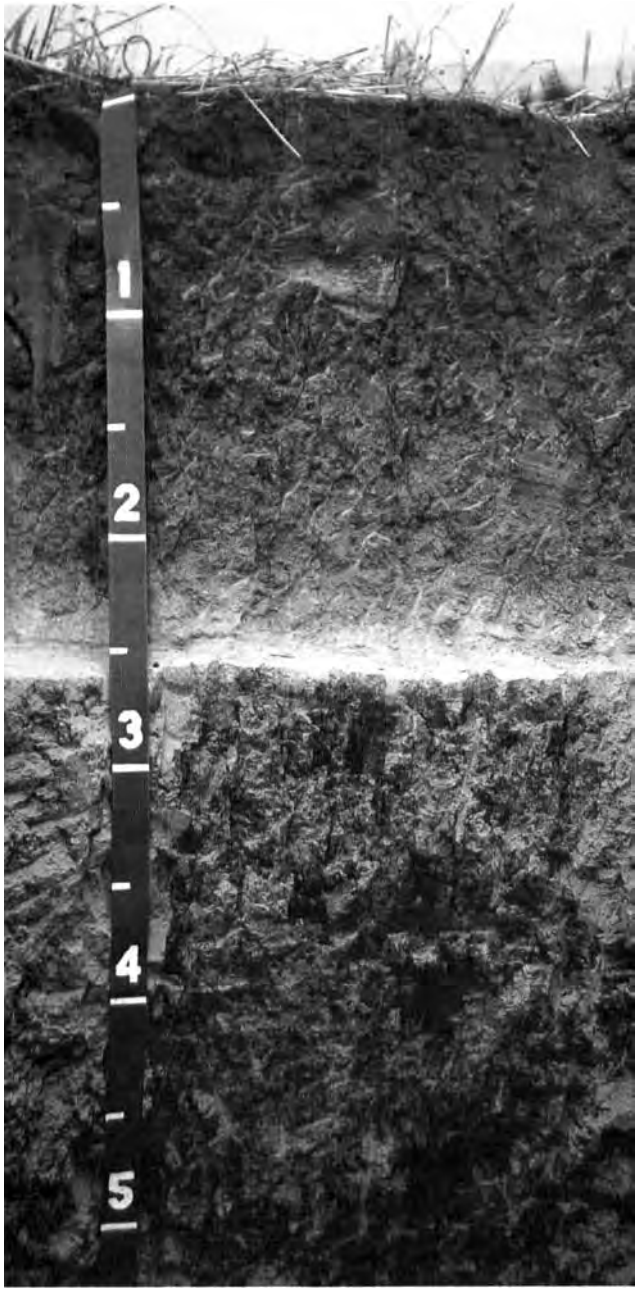


Figure 27.—A profile of Taney silt loam in an area of Taney-Setters complex, 3 to 8 percent slopes. A fragipan is at a depth of about 30 inches (numerals on tape indicate feet).

E horizon:
Value—7 or 8 dry, 4 to 6 moist
Chroma—2 or 3 dry or moist
Clay content—10 to 20 percent
Base saturation—65 to 80 percent
Reaction—moderately acid or slightly acid

Btxb horizon:
Value—3 to 5 moist
Chroma—3 or 4 dry or moist
Texture—silt loam or silty clay loam
Clay content—23 to 35 percent
Bulk density—1.60 to 1.75 grams per cubic centimeter
Base saturation—65 to 80 percent
Reaction—moderately acid or slightly acid

Btb horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—28 to 42 percent
Bulk density—1.45 to 1.65 grams per cubic centimeter
Reaction—moderately acid to neutral

Thatuna Series

Taxonomic class: Fine-silty, mixed, mesic Boralfic Argixerolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 1 to 40 percent
Elevation: 2,000 to 3,200 feet
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—46 to 49 degrees F
Frost-free season (32 degrees F)—110 to 150 days

Typical Pedon Description

Ap—0 to 7 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; moderate fine subangular blocky structure parting to moderate fine and medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; neutral (pH 6.6); clear wavy boundary.

A—7 to 13 inches; very dark grayish brown (10YR 3/2) silt loam, black (10YR 2/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; many very fine and fine irregular pores; slightly acid (pH 6.5); gradual wavy boundary.

AB—13 to 16 inches; very dark grayish brown (10YR 3/2) silt loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and many very fine roots; many very fine and fine irregular pores;

common vertical worm channels; slightly acid (pH 6.5); clear wavy boundary.

Bw—16 to 31 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many very fine and common fine roots; many very fine and fine irregular pores and common very fine and fine tubular pores; common vertical worm channels; slightly acid (pH 6.5); clear smooth boundary.

E—31 to 37 inches; pale brown (10YR 6/3) silt loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine irregular pores and few very fine and common fine and medium tubular pores; few fine iron and manganese concretions; slightly acid (pH 6.4); abrupt smooth boundary.

Btb1—37 to 50 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse and very coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, firm, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores and common very fine and fine irregular pores; common faint and few distinct discontinuous clay films lining pores and on faces of peds; many prominent discontinuous skeletans on faces of prisms; few fine iron and manganese concretions; neutral (pH 6.8); gradual wavy boundary.

Btb2—50 to 61 inches; yellowish brown (10YR 5/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse and very coarse prismatic structure parting to moderate fine and medium subangular blocky; slightly hard, firm, sticky and plastic; few very fine roots; common very fine and fine irregular pores and many very fine and fine tubular pores; many distinct discontinuous dark yellowish brown (10YR 4/6) clay films lining pores and on faces of peds; few distinct patchy skeletans on faces of peds; few fine iron and manganese concretions; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Thatuna-Naff complex, 25 to 40 percent slopes

Location in survey area: About 3 miles southwest of Genesee, in Nez Perce County; about 2,700 feet north and 500 feet east of the southwest corner of sec. 28, T. 37 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—24 to 36 inches
Depth to seasonal perched water table—24 to 36 inches in February through April
Depth to Btb horizon—29 to 40 inches
Average annual soil temperature—48 to 50 degrees F

Particle-size control section (weighted average):
Clay content—27 to 35 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—2 or 3 dry, 1 or 2 moist
Reaction—slightly acid or neutral

Bw horizon:
Value—3 or 4 dry
Chroma—2 or 3 moist
Clay content—18 to 25 percent
Reaction—slightly acid or neutral

E horizon:
Value—6 or 7 dry, 3 to 5 moist
Clay content—10 to 18 percent
Reaction—slightly acid or neutral

Btb horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—27 to 35 percent

Tilma Series

Taxonomic class: Fine, mixed, mesic Xeric Argialbolls

Depth class: Very deep
Drainage class: Moderately well drained
Permeability: Slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 10 to 15 percent
Elevation: 2,300 to 2,800 feet
Climatic data (average annual):
Precipitation—20 to 22 inches
Air temperature—47 to 50 degrees F
Frost-free season (32 degrees F)—130 to 150 days

Typical Pedon Description

Ap—0 to 8 inches; brown (10YR 4/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak coarse subangular blocky structure parting to moderate fine granular; hard, friable, slightly sticky and plastic; common very fine and fine roots; many very fine and fine tubular pores; moderately acid (pH 6.0); abrupt smooth boundary.

BA—8 to 16 inches; dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; few prominent patchy black (10YR 2/1) organic coatings on faces of peds; few distinct discontinuous light brownish gray (10YR 6/2) skeletans on faces of peds; neutral (pH 7.0); clear wavy boundary.

Bt—16 to 23 inches; brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; few very fine and fine roots; many very fine and fine tubular pores; many prominent discontinuous light brownish gray (10YR 6/2) skeletans on faces of peds; few distinct patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; few distinct patchy black (10YR 2/1) organic coatings on faces of peds; neutral (pH 7.0); clear irregular boundary.

E—23 to 25 inches; light gray (10YR 7/2) silt loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; few very fine and fine roots; common very fine and fine tubular pores; few remnants of Bt horizon material in some peds; neutral (pH 7.0); abrupt irregular boundary.

Btb1—25 to 42 inches; yellowish brown (10YR 5/4) silty clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure; hard, firm, sticky and plastic; very few fine and very fine roots; common very fine and fine tubular pores; common prominent patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; peds capped with prominent light brownish gray (10YR 6/2) skeletans at upper boundary; few fine rounded black iron and manganese concretions; neutral (pH 7.2); gradual wavy boundary.

Btb2—42 to 60 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and plastic; few very fine and fine tubular pores; few prominent patchy dark yellowish brown (10YR 3/4) clay films on faces of peds; few fine rounded black iron and manganese concretions; neutral (pH 7.2).

Typical Pedon Location

Map unit in which located: Thatuna-Naff-Tilma complex, 10 to 25 percent slopes

Location in survey area: About 2 miles southeast of Genesee, in Nez Perce County; about 1,200 feet north and 2,400 feet east of the southwest corner of sec. 24, T. 37 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—16 to 23 inches
Organic matter content in mollic epipedon (weighted average)—1 to 3 percent
Depth to seasonal perched water table—16 to 28 inches in November through April
Depth to argillic horizon—18 to 26 inches
Average annual soil temperature—47 to 52 degrees F

A horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid or slightly acid

Bt horizon:
Value—3 to 5 dry, 2 or 3 moist
Chroma—2 or 3 dry or moist
Reaction—moderately acid to neutral

E horizon:
Value—4 or 5 moist
Reaction—moderately acid to neutral

Btb1 horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

Btb2 horizon:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silty clay
Clay content—35 to 45 percent
Reaction—slightly acid or neutral

Tombeall Series

Taxonomic class: Coarse-loamy, mixed, mesic Cumulic Haploxerolls

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderate
Landform: Low terraces, flood plains

Parent material: Alluvium derived from mixed sources over gravelly alluvium derived from basalt
Slope range: 0 to 4 percent
Elevation: 800 to 1,200 feet
Climatic data (average annual):
Precipitation—16 to 22 inches
Air temperature—52 to 54 degrees F
Frost-free season (32 degrees F)—160 to 190 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate medium and fine granular structure; hard, firm, slightly sticky and slightly plastic; many fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.
A1—7 to 17 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); clear smooth boundary.
A2—17 to 28 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; common fine distinct mottles that are strong brown (7.5YR 4/6) when moist; weak coarse prismatic structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; common very fine, fine, and medium tubular pores; 5 percent gravel; neutral (pH 7.2); abrupt smooth boundary.
2C1—28 to 35 inches; brown (10YR 4/3) very gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; common fine distinct mottles that are strong brown (7.5YR 4/6) when moist; massive; slightly hard, very friable, nonsticky and nonplastic; few very fine roots; many very fine and fine irregular pores; 40 percent gravel and 10 percent cobbles; neutral (pH 7.2); gradual smooth boundary.
2C2—35 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many fine and very fine irregular pores; 60 percent gravel and 20 percent cobbles; neutral (pH 7.0).

Typical Pedon Location

Map unit in which located: Tombeall silt loam, 0 to 4 percent slopes
Location in survey area: About 1 mile south of Spalding, in Nez Perce County; about 1,250 feet south and 100 feet east of the northwest corner of sec. 26, T. 36 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 35 inches
Depth to mottles—12 to 30 inches
Depth to seasonal high water table—12 to 30 inches in February through April
Frequency of flooding—rare or occasional for brief periods in December through June
Thickness of solum—25 to 35 inches
Average annual soil temperature—54 to 56 degrees F

Particle-size control section (weighted average):
Clay content—11 to 16 percent
Coarse fragment content—15 to 35 percent

Ap horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—neutral or mildly alkaline

A1 and A2 horizons:
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Texture—silt loam, sandy loam, or loam
Gravel content—0 to 15 percent
Clay content—15 to 20 percent
Reaction—neutral or mildly alkaline

2C1 horizon:
Value—3 or 4 dry
Chroma—2 or 3 dry or moist
Texture—very gravelly sandy loam or very gravelly loam
Coarse fragment content—40 to 60 percent
Reaction—neutral or mildly alkaline

2C2 horizon:
Value—3 to 5 dry
Chroma—2 or 3 dry or moist
Texture—extremely gravelly sandy loam or extremely gravelly loam
Coarse fragment content—65 to 90 percent
Reaction—neutral or mildly alkaline

Uhlig Series

Taxonomic class: Coarse-loamy, mixed, mesic Pachic Haploxerolls

Depth class: Very deep
Drainage class: Well drained

Permeability: Moderate
Landform: Dissected alluvial terraces
Parent material: Alluvium
Slope range: 2 to 35 percent
Elevation: 800 to 1,300 feet
Climatic data (average annual):
Precipitation—16 to 20 inches
Air temperature—50 to 51 degrees F
Frost-free season (32 degrees F)—150 to 175 days

Typical Pedon Description

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak thick platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and few coarse roots; many very fine and fine irregular pores; neutral (pH 7.0); clear smooth boundary.
A2—6 to 15 inches; grayish brown (10YR 5/2) silt loam, very dark brown (10YR 2/2) moist; moderate fine and medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many very fine and fine roots and common coarse roots; many very fine and fine irregular pores; neutral (pH 7.0); clear wavy boundary.
Bw1—15 to 25 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots and few coarse roots; many very fine irregular pores and few coarse irregular pores; neutral (pH 7.2); gradual wavy boundary.
Bw2—25 to 33 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many very fine, fine, and medium roots and common coarse roots; many very fine and fine irregular pores; neutral (pH 7.3); gradual wavy boundary.
Bw3—33 to 39 inches; pale brown (10YR 6/3) very fine sandy loam, dark brown (10YR 4/3) moist; weak medium prismatic structure; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots and few coarse roots; many very fine and fine irregular pores; 5 percent rounded granite and basalt gravel; neutral (pH 7.3); gradual smooth boundary.
C1—39 to 56 inches; pale brown (10YR 6/3) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine and medium roots; many very fine and fine irregular pores; 5 percent rounded granite and basalt gravel; mildly alkaline (pH 7.4); gradual wavy boundary.
C2—56 to 68 inches; light yellowish brown (10YR 6/4) very fine sandy loam, brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; many very fine and fine irregular pores; mildly alkaline (pH 7.5).

Typical Pedon Location

Map unit in which located: Uhlig silt loam, 8 to 20 percent slopes
Location in survey area: About 2 miles southeast of Myrtle, in Nez Perce County; about 1,550 feet north and 1,000 feet east of the southwest corner of sec. 3, T. 36 N., R. 3 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Average annual soil temperature—51 to 52 degrees F

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Gravel content—0 to 5 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 moist
Reaction—slightly acid or neutral

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—loam, silt loam, or very fine sandy loam

C horizon:
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam or fine sandy loam
Gravel content—0 to 15 percent
Reaction—neutral or mildly alkaline

Uhlorn Series

Taxonomic class: Fine-silty, mixed, mesic Typic Argixerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess
Slope range: 2 to 20 percent
Elevation: 2,600 to 4,100 feet

Climatic data (average annual):
Precipitation—21 to 24 inches
Air temperature—44 to 48 degrees F
Frost-free season (32 degrees F)—100 to 140 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; moderate very coarse granular structure parting to moderate coarse granular; slightly hard, friable, slightly sticky and nonplastic; common very fine roots; common very fine and few fine irregular pores; moderately acid (pH 5.8); abrupt smooth boundary.

A1—7 to 12 inches; grayish brown (10YR 5/2) silt loam, very dark gray (10YR 3/1) moist; weak coarse prismatic structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; many very fine and few fine tubular pores; common wormcasts and worm channels; neutral (pH 6.9); clear smooth boundary.

A2—12 to 17 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; weak thick platy structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common very fine and few fine tubular pores; neutral (pH 7.1); clear smooth boundary.

Bt1—17 to 23 inches; yellowish brown (10YR 5/4) silt loam, dark brown (10YR 4/3) moist; weak medium prismatic structure; hard, friable, sticky and slightly plastic; common very fine roots; many very fine and common fine tubular pores; common faint discontinuous clay films on faces of peds; common wormcasts and worm channels; few prominent light gray (10YR 7/2) skeletans on faces of peds; mildly alkaline (pH 7.6); gradual wavy boundary.

Bt2—23 to 35 inches; light yellowish brown (10YR 6/4) silty clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to weak fine prismatic; hard, friable, sticky and slightly plastic; common very fine roots; common very fine and fine and few medium tubular pores; common faint discontinuous clay films on faces of peds and in pores; common prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds; mildly alkaline (pH 7.7); clear wavy boundary.

Bt3—35 to 44 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure; hard, friable, sticky and plastic; common very fine roots; common very fine and fine and few medium tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; common light gray (10YR 7/2) skeletans on faces of peds and common pockets in peds; dark yellowish brown (10YR 4/4) clay lamellae 4 to 12 millimeters thick; mildly alkaline (pH 7.7); gradual wavy boundary.

Bt4—44 to 55 inches; light yellowish brown (10YR 6/4) silty clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; hard, friable, sticky and slightly plastic; common very fine roots; common very fine, fine, and medium tubular pores; many distinct discontinuous clay films on faces of peds and lining pores; dark yellowish brown (10YR 4/4) clay lamellae 5 to 12 millimeters thick; few prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds and common pockets in peds; mildly alkaline (pH 7.7); gradual wavy boundary.

Btb—55 to 69 inches; brown (7.5YR 5/4) silty clay loam, dark brown (7.5YR 4/4) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; few very fine roots; common very fine and few fine tubular pores; distinct continuous clay films on faces of peds and lining pores; few prominent discontinuous light gray (10YR 7/2) skeletans on faces of peds; common slickensides oriented at 10 degrees from horizontal on faces of peds; mildly alkaline (pH 7.7).

Typical Pedon Location

Map unit in which located: Uhlorn-Nez Perce complex, 2 to 10 percent slopes

Location in survey area: About 3 miles east of Craigmont, in Lewis County; about 2,040 feet south and 1,340 feet west of the northeast corner of sec. 2, T. 33 N., R. 1 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—14 to 20 inches
Organic matter content in mollic epipedon (weighted average)—3 to 6 percent
Base saturation—75 to 90 percent between depths of 10 and 30 inches
Average annual soil temperature—47 to 51 degrees F

Particle-size control section (weighted average):
Clay content—30 to 34 percent

A horizon:
Value (upper part)—3 or 4 dry
Value (lower part)—3 to 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 dry

Chroma (lower part)—2 or 3 dry, 1 or 2 moist
Reaction—moderately acid to neutral

Bt1 horizon, and BA horizon (present in some pedons):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—silty clay loam or silt loam
Clay content—24 to 32 percent
Reaction—slightly acid to mildly alkaline

Bt2, Bt3, and Bt4 horizons:
Hue—10YR or 7.5YR
Value—5 or 6 dry, 3 to 5 moist
Chroma—3 to 6 dry, 3 or 4 moist
Clay content—28 to 34 percent
Reaction—neutral or mildly alkaline

Btb horizon (absent in some pedons):
Clay content—35 to 38 percent
Reaction—neutral or mildly alkaline

Uptmor Series

Taxonomic class: Fine, montmorillonitic, frigid Ultic Argixerolls

Depth class: Deep
Drainage class: Well drained
Permeability: Slow
Landform: Canyonsides, canyon benches
Parent material: Loess, material weathered from basalt
Slope range: 15 to 30 percent
Elevation: 2,700 to 4,100 feet
Climatic data (average annual):
Precipitation—24 to 26 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—80 to 110 days

Typical Pedon Description

Oi—0.5 inch to 0; undecomposed moss, needles, and twigs.
A—0 to 6 inches; brown (7.5YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many very fine, fine, and medium roots; many very fine and common fine irregular pores; 10 percent gravel; moderately acid (pH 5.9); clear smooth boundary.
BA—6 to 15 inches; brown (10YR 4/3) clay loam, dark brown (7.5YR 3/2) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, sticky and plastic; common very fine roots and many fine, medium, and coarse roots; many very fine and common fine irregular pores; common faint discontinuous clay films on faces of peds and lining pores; 10 percent gravel; moderately acid (pH 5.6); gradual wavy boundary.
Bt1—15 to 26 inches; brown (7.5YR 4/4) clay, dark brown (7.5YR 3/4) moist; weak medium prismatic structure parting to strong fine and medium subangular blocky; hard, firm, very sticky and very plastic; common very fine, fine, and coarse roots and many medium roots; common very fine and fine tubular pores; many prominent discontinuous clay films on faces of peds and lining pores; 10 percent gravel; moderately acid (pH 5.6); clear smooth boundary.
Bt2—26 to 40 inches; brown (7.5YR 4/4) gravelly clay, dark brown (7.5YR 3/4) moist; moderate medium prismatic structure parting to strong medium subangular blocky; hard, firm, very sticky and very plastic; common very fine and fine roots and many medium and coarse roots; common very fine and fine tubular pores; many prominent discontinuous clay films on faces of peds and lining pores; 15 percent gravel and 5 percent cobbles; moderately acid (pH 5.6); gradual wavy boundary.
Bt3—40 to 47 inches; brown (7.5YR 4/4) cobbly clay, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure; hard, firm, very sticky and very plastic; few very fine roots and common fine, medium, and coarse roots; common very fine and few fine tubular pores; 10 percent gravel and 15 percent cobbles; moderately acid (pH 5.7); clear wavy boundary.
R—47 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Klickson-Uptmor complex, 15 to 45 percent slopes
Location in survey area: About 1 mile east of Waha, in Nez Perce County; about 850 feet north and 1,500 feet east of the southwest corner of sec. 10, T. 33 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 19 inches
Base saturation—less than 75 percent in the upper 30 inches
Depth to bedrock—40 to 60 inches
Average annual soil temperature—45 to 47 degrees F

Particle-size control section (weighted average):
Clay content—35 to 45 percent
Coarse fragment content—10 to 15 percent

A horizon:
Hue—7.5YR or 10YR

Value—3 or 4 dry
Reaction—moderately acid or slightly acid

Bt horizon:
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 to 6 dry or moist
Texture—clay, silty clay loam, silty clay, gravelly clay, cobbly clay, or cobbly silty clay loam
Clay content—35 to 60 percent
Coarse fragment content—10 to 35 percent
Reaction—moderately acid or slightly acid

Uvi Series

Taxonomic class: Fine-loamy, mixed, frigid Vitrandic Xerochrepts

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Canyonsides
Parent material: Loess, material weathered from granite
Slope range: 35 to 75 percent
Elevation: 1,400 to 3,400 feet
Climatic data (average annual):
Precipitation—26 to 28 inches
Air temperature—42 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

Typical Pedon Description

A1—0 to 4 inches; brown (10YR 5/3) silt loam, very dark grayish brown (10YR 3/2) moist; moderate very fine and fine granular structure; soft, very friable, slightly sticky and nonplastic; many fine and very fine roots; many fine irregular pores; 5 percent gravel; moderately acid (pH 6.0); clear smooth boundary.

A2—4 to 13 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; many very fine tubular pores; 5 percent fine gravel; moderately acid (pH 5.6); gradual smooth boundary.

Bt1—13 to 35 inches; yellowish brown (10YR 5/4) loam, brown (10YR 4/3) moist; moderate coarse, medium, and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine, fine, and medium roots; common very fine and fine tubular pores; many faint discontinuous clay films on faces of peds and on sand grains; 5 percent fine gravel; moderately acid (pH 5.6); clear wavy boundary.

Bt2—35 to 43 inches; brownish yellow (10YR 6/6) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, firm, slightly sticky and nonplastic; common medium roots and few fine and very fine roots; few fine tubular pores and common fine and very fine irregular pores; common faint discontinuous clay films on faces of peds and on sand grains; 10 percent fine gravel; moderately acid (pH 5.6); clear wavy boundary.

BC—43 to 55 inches; brownish yellow (10YR 6/6) loam, yellowish brown (10YR 5/4) moist; massive; hard, firm, slightly sticky and nonplastic; few fine and very fine roots; few very fine tubular pores and common fine irregular pores; common faint discontinuous clay films on faces of peds and on sand grains; 10 percent fine gravel; moderately acid (pH 5.6); gradual smooth boundary.

C—55 to 65 inches; very pale brown (10YR 8/4) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, firm, slightly sticky and nonplastic; few fine and very fine roots; common very fine tubular pores; few faint discontinuous clay films on faces of peds and common distinct discontinuous clay films in pores; 40 percent fine gravel; moderately acid (pH 5.6).

Typical Pedon Location

Map unit in which located: Uvi silt loam, 35 to 75 percent slopes
Location in survey area: About 10 miles north of Nezperce, in Lewis County; about 1,000 feet south and 500 feet west of the northeast corner of sec. 17, T. 35 N., R. 2 E.

Range in Characteristics

Profile:
Average annual soil temperature—45 to 47 degrees F

Upper 7 to 14 inches:
Volcanic glass content—5 to 10 percent
Acid-oxalate extractable Al plus ½ Fe—0.4 to 1.0 percent

Particle-size control section (weighted average):
Clay content—18 to 20 percent
Coarse fragment content—0 to 5 percent

A horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry, 2 to 4 moist
Reaction—moderately acid or slightly acid

Bt horizon:
Value—5 or 6 dry, 4 or 5 moist
Chroma—3 to 6 dry or moist

Texture—loam or sandy loam
Clay content—12 to 20 percent
Gravel content—0 to 10 percent
Base saturation—40 to 60 percent
Reaction—moderately acid or slightly acid

C horizon:
Texture—very gravelly loam or very gravelly sandy loam
Clay content—5 to 12 percent
Gravel content—35 to 55 percent
Reaction—moderately acid or slightly acid

Vollmer Series

Taxonomic class: Fine-loamy, mixed, mesic Typic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus
Parent material: Loess over material weathered from basalt
Slope range: 3 to 25 percent
Elevation: 2,500 to 4,100 feet
Climatic data (average annual):
Precipitation—21 to 24 inches
Air temperature—45 to 48 degrees F
Frost-free season (32 degrees F)—100 to 140 days

Typical Pedon Description

A1—0 to 3 inches; grayish brown (10YR 5/2) silt loam, black (10YR 2/1) moist; moderate medium subangular blocky structure parting to moderate very fine granular; hard, firm, sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores and common fine irregular pores; 5 percent gravel; slightly acid (pH 6.2); clear smooth boundary.
A2—3 to 6 inches; grayish brown (10YR 5/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure; hard, firm, sticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 5 percent gravel; neutral (pH 6.8); clear smooth boundary.
A3—6 to 12 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; massive, compacted by tillage; hard, firm, sticky and slightly plastic; common very fine and fine roots and few medium roots; common fine and few very fine tubular pores; common organic coatings on faces of peds; 5 percent gravel; neutral (pH 6.6); clear smooth boundary.
Bt1—12 to 28 inches; brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common very fine and fine roots and few medium roots; common very fine and fine tubular pores and few very fine and fine irregular pores; many faint discontinuous clay films lining pores and common faint patchy clay films on faces of peds; few clay bands 5 millimeters thick; common distinct skeletans on faces of peds; 5 percent gravel; neutral (pH 6.6); clear wavy boundary.
Bt2—28 to 36 inches; pale brown (10YR 6/3) cobbly silt loam, brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common very fine and few fine and medium roots; common very fine and fine tubular pores; common distinct clay films lining pores; few clay bands 5 millimeters thick; common distinct skeletans on faces of peds; 10 percent cobbles and 10 percent gravel; neutral (pH 6.6); abrupt wavy boundary.
2R—36 inches; basalt.

Typical Pedon Location

Map unit in which located: Uhlorn-Vollmer complex, 8 to 20 percent slopes
Location in survey area: About 2.5 miles east of Mohler, in Lewis County; about 1,150 feet south and 1,300 feet east of the northwest corner of sec. 23, T. 34 N., R. 1 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 18 inches
Base saturation below a depth of 10 inches—75 to 95 percent
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 50 degrees F

Particle-size control section (weighted average):
Clay content—24 to 35 percent
Coarse fragment content—5 to 25 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma (upper part)—1 or 2 moist
Chroma (lower part)—2 or 3 dry or moist
Reaction—slightly acid or neutral

Bt horizon:
Value—4 to 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist

Texture (upper part)—silt loam or silty clay loam
Texture (lower part)—cobbly silt loam, gravelly clay loam, gravelly silty clay loam, or cobbly silty clay loam
Clay content—24 to 35 percent
Coarse fragment content—0 to 35 percent
Reaction—slightly acid or neutral

Waha Series

Taxonomic class: Fine-loamy, mixed, mesic Pachic Argixerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Hills on plateaus, canyonsides
Parent material: Loess, colluvium derived from basalt
Slope range: 3 to 45 percent
Elevation: 1,000 to 2,800 feet
Climatic data (average annual):
Precipitation—18 to 22 inches
Air temperature—47 to 49 degrees F
Frost-free season (32 degrees F)—120 to 160 days

Typical Pedon Description

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak medium subangular blocky structure parting to weak medium granular; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 6.8); clear smooth boundary.

A—7 to 13 inches; dark grayish brown (10YR 4/2) silt loam, very dark brown (10YR 2/2) moist; weak coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; common very fine and fine tubular pores; neutral (pH 7.0); clear smooth boundary.

Bt1—13 to 22 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; moderate medium and coarse subangular blocky structure; hard, firm, sticky and plastic; few very fine roots; common very fine and fine tubular pores; many faint patchy clay films and common distinct discontinuous clay films on faces of peds and in pores; few faint patchy skeletans on faces of peds; few black (10YR 2/1, moist) organic coatings on faces of peds; neutral (pH 7.2); gradual wavy boundary.

Bt2—22 to 29 inches; brown (10YR 5/3) silty clay loam, dark brown (10YR 3/3) moist; strong medium prismatic structure; hard, firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many distinct continuous clay films on faces of peds and in pores; few black (10YR 2/1, moist) organic coatings on faces of peds; 5 percent gravel; neutral (pH 7.2); clear wavy boundary.

2Bt3—29 to 34 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium and coarse prismatic structure; very hard, very firm, sticky and plastic; few very fine roots; few very fine and fine tubular pores; many distinct discontinuous clay films on faces of peds and in pores; few black (10YR 2/1, moist) organic coatings on faces of peds; 25 percent gravel; neutral (pH 7.2); clear wavy boundary.

2R—34 inches; basalt.

Typical Pedon Location

Map unit in which located: Naff-Waha complex, 25 to 40 percent slopes
Location in survey area: About 3 miles northwest of Lenore, in Nez Perce County; about 2,000 feet north and 1,800 feet west of the southeast corner of sec. 5, T. 36 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 30 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—49 to 51 degrees F

Particle-size control section (weighted average):
Clay content—27 to 35 percent
Coarse fragment content—5 to 15 percent

A horizon:
Value—3 to 5 dry
Reaction—slightly acid or neutral

Bt horizon:
Value—3 or 4 moist
Chroma—2 to 4 dry, 2 or 3 moist
Texture—silt loam or silty clay loam
Gravel content—0 to 10 percent
Clay content—24 to 35 percent

2Bt horizon:
Value—3 or 4 moist
Chroma—2 to 4 dry or moist
Texture—gravelly clay loam, gravelly silty clay loam, or cobbly silty clay loam
Clay content—27 to 38 percent
Coarse fragment content—20 to 35 percent

Watama Series

Taxonomic class: Fine-loamy, mixed, mesic Pachic Haploxerolls

Depth class: Moderately deep
Drainage class: Well drained
Permeability: Moderate
Landform: Hills, canyonsides
Parent material: Loess, material weathered from basalt
Slope range: 10 to 35 percent
Elevation: 1,000 to 3,500 feet
Climatic data (average annual):
Precipitation—14 to 22 inches
Air temperature—45 to 52 degrees F
Frost-free season (32 degrees F)—110 to 160 days

Typical Pedon Description

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak fine and very fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; many very fine and fine tubular and irregular pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

A2—6 to 11 inches; dark grayish brown (10YR 4/2) silt loam, very dark gray (10YR 3/1) moist; weak medium subangular blocky structure parting to weak fine granular; soft, very friable, sticky and plastic; many very fine and fine roots; many very fine tubular pores and common fine tubular and irregular pores; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw1—11 to 19 inches; grayish brown (10YR 5/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine prismatic structure and weak medium subangular blocky; slightly hard, friable, sticky and plastic; many fine and very fine roots; common very fine and fine tubular pores; organic stains on faces of peds; 10 percent gravel; neutral (pH 7.0); clear smooth boundary.

Bw2—19 to 34 inches; brown (10YR 5/3) silt loam, dark brown (10YR 3/3) moist; weak fine prismatic structure and weak medium subangular blocky; hard, firm, sticky and plastic; common very fine roots; common very fine and fine tubular pores; 10 percent gravel; neutral (pH 7.0); clear irregular boundary.

Bw3—34 to 38 inches; yellowish brown (10YR 5/4) gravelly silt loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; common fine and few very fine tubular pores; 15 percent gravel and 5 percent cobbles; mildly alkaline (pH 7.8); abrupt wavy boundary.

2R—38 inches; fractured basalt; soil material in fractures.

Typical Pedon Location

Map unit in which located: Watama-Flybow complex, 10 to 35 percent slopes
Location in survey area: About 7 miles southeast of Craigmont, in Lewis County; about 900 feet south and 2,600 feet west of the northeast corner of sec. 20, T. 33 N., R. 1 E.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 34 inches
Depth to bedrock—20 to 40 inches
Average annual soil temperature—47 to 54 degrees F

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Chroma—1 or 2 moist

Bw horizon (upper part):
Value—5 or 6 dry, 3 or 4 moist
Chroma—2 or 3 dry or moist
Clay content—18 to 27 percent
Gravel content—5 to 15 percent
Reaction—neutral or mildly alkaline

Bw horizon (lower part):
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry
Clay content—18 to 24 percent
Coarse fragment content—15 to 30 percent
Reaction—neutral or mildly alkaline

Webbridge Series

Taxonomic class: Ashy over loamy-skeletal, mixed Alfic Vitricryands

Depth class: Deep
Drainage class: Well drained
Permeability: Moderately slow
Landform: Canyonsides
Parent material: Volcanic ash, colluvium derived from basalt
Slope range: 35 to 75 percent
Elevation: 3,900 to 5,000 feet
Climatic data (average annual):
Precipitation—27 to 29 inches
Air temperature—41 to 43 degrees F
Frost-free season (32 degrees F)—60 to 70 days

Typical Pedon Description

Oi—1 inch to 0; slightly decomposed twigs, moss, and needles.

A—0 to 3 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak fine granular structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots; many fine and very fine irregular pores; less than 5 percent fine gravel; slightly acid (pH 6.1); clear smooth boundary.

Bw1—3 to 10 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 3/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 5.9); gradual smooth boundary.

Bw2—10 to 17 inches; light yellowish brown (10YR 6/4) silt loam, dark yellowish brown (10YR 4/4) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and slightly plastic; many fine and very fine roots and few medium roots; many fine and very fine tubular pores; 10 percent fine gravel; moderately acid (pH 5.9); abrupt irregular boundary.

2Btb1—17 to 24 inches; yellowish brown (10YR 5/4) cobbly clay loam, dark brown (7.5YR 3/4) moist, yellowish brown (10YR 5/6) crushed; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; common fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 10 percent gravel, 15 percent cobbles, and 5 percent stones; moderately acid (pH 5.7); gradual wavy boundary.

2Btb2—24 to 34 inches; yellowish brown (10YR 5/4) very cobbly clay loam, dark brown (7.5YR 3/4) moist, yellowish brown (10YR 5/6) crushed; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine and very fine roots and few medium roots; many fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 15 percent gravel, 25 percent cobbles, and 5 percent stones; moderately acid (pH 5.7); clear wavy boundary.

2Btb3—34 to 45 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark brown (7.5YR 3/4) moist, light yellowish brown (10YR 6/4) crushed; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; common fine roots; many fine and very fine tubular pores; very few faint patchy yellowish brown (10YR 5/4) clay films on faces of peds; 30 percent gravel, 40 percent cobbles, and 5 percent stones; neutral (pH 6.6); clear smooth boundary.

2Btb4—45 to 53 inches; yellowish brown (10YR 5/4) extremely cobbly loam, dark yellowish brown (10YR 4/4) moist, light yellowish brown (10YR 6/4) crushed; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few fine roots matted around rock fragments; common fine and very fine tubular pores; 30 percent gravel, 55 percent cobbles, and 5 percent stones; slightly acid (pH 6.5); clear smooth boundary.

2R—53 inches; basalt.

Typical Pedon Location

Map unit in which located: Webbridge-Agatha association, 35 to 75 percent slopes

Location in survey area: About 3 miles southeast of Waha, in Nez Perce County; about 1,300 feet south and 2,570 feet east of the northwest corner of sec. 26, T. 33 N., R. 4 W.

Range in Characteristics

Profile:

Depth to bedrock—40 to 60 inches

Average annual soil temperature—42 to 45 degrees F

Average summer soil temperature (areas without O horizon)—52 to 54 degrees F

Volcanic ash mantle:

Thickness—14 to 24 inches

Volcanic glass content (0.02- to 2.0-millimeter fraction)—25 to 45 percent

Acid-oxalate extractable Al plus ½ Fe—1 to 2 percent

Moist bulk density—0.75 to 0.90 gram per centimeter

15-bar water retention—8 to 12 percent

Lower part of particle-size control section (weighted average):

Clay content—25 to 32 percent

Coarse fragment content—40 to 60 percent

A horizon:

Hue—7.5YR or 10YR

Value—4 or 5 dry, 3 or 4 moist

Reaction—slightly acid or neutral

Bw horizon:

Hue—7.5YR or 10YR

Value—5 or 6 dry, 3 or 4 moist

Gravel content—5 to 25 percent, dominantly fine gravel

Reaction—moderately acid or slightly acid

2Btb horizon (upper part):
Hue—7.5YR or 10YR
Value—4 to 6 dry, 3 or 4 moist
Texture—cobbly clay loam, very cobbly clay loam, very gravelly loam, very gravelly clay loam, or gravelly clay loam
Rock fragment content—25 to 50 percent
Clay content—25 to 32 percent
Reaction—moderately acid or slightly acid

2Btb horizon (lower part):
Hue—5YR, 7.5YR, or 10YR
Value—4 to 6 dry, 3 or 4 moist
Chroma—4 to 6 dry or moist
Texture—extremely cobbly loam, very cobbly clay loam, very gravelly clay loam, or very gravelly loam
Rock fragment content—40 to 90 percent
Clay content—25 to 32 percent
Reaction—moderately acid to neutral

Westlake Series

Taxonomic class: Fine-silty, mixed, frigid Cumulic Ultic Haploxerolls

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Moderately slow
Landform: Drainageways on plateaus
Parent material: Silty alluvium
Slope range: 0 to 3 percent
Elevation: 2,500 to 4,200 feet
Climatic data (average annual):
Precipitation—21 to 24 inches
Air temperature—43 to 45 degrees F
Frost-free season (32 degrees F)—100 to 120 days

Typical Pedon Description

Ap1—0 to 5 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; weak fine and medium subangular blocky structure parting to moderate fine granular; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.6); clear wavy boundary.
Ap2—5 to 10 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine and very fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.8); gradual wavy boundary.
A—10 to 21 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine and medium subangular blocky structure; hard, firm, slightly sticky and slightly plastic; common fine and very fine roots; common fine and very fine tubular pores; neutral (pH 6.8); clear smooth boundary.
Cg1—21 to 26 inches; gray (10YR 5/1) silt loam, dark gray (10YR 4/1) moist; few fine distinct very pale brown (10YR 7/3) mottles, brown (10YR 5/3) moist; weak fine and medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common very fine roots; many medium, fine, and very fine tubular pores; common worm channels filled with A horizon material; neutral (pH 7.0); clear smooth boundary.
Cg2—26 to 40 inches; light gray (10YR 6/1) silt loam, very dark gray (10YR 3/1) moist; few fine distinct very pale brown (10YR 7/3) mottles, brown (10YR 5/3) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; few very fine roots; many fine and very fine and common medium tubular pores; common worm channels filled with A horizon material; neutral (pH 7.0); gradual wavy boundary.
Cg3—40 to 49 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; few fine prominent yellow (10YR 7/6) mottles, yellowish brown (10YR 5/6) moist; weak medium and coarse subangular blocky structure; hard, friable, sticky and plastic; many fine and very fine tubular pores; common worm channels filled with A horizon material; mildly alkaline (pH 7.4); gradual wavy boundary.
Cg4—49 to 64 inches; light gray (10YR 7/1) silt loam, gray (10YR 5/1) moist; common fine and medium prominent yellow (10YR 7/6) mottles; yellowish brown (10YR 5/6) moist; massive; hard, friable, slightly sticky and slightly plastic; common very fine irregular pores; common worm channels filled with A horizon material; mildly alkaline (pH 7.4).

Typical Pedon Location

Map unit in which located: Westlake-Latahco complex, 0 to 3 percent slopes
Location in survey area: About 1 mile south of Genesee, in Nez Perce County; about 1,000 feet south and 200 feet west of the northeast corner of sec. 22, T. 37 N., R. 5 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—20 to 35 inches

Base saturation—60 to 75 percent in some part between depths of 10 and 30 inches
Depth to seasonal high water table—18 to 30 inches in February through May
Frequency of flooding—occasional for brief periods in February through April
Average annual soil temperature—45 to 47 degrees F

Thin lenses of sandy loam or gravelly sandy loam are below a depth of 40 inches in some pedons.

Particle-size control section (weighted average):
Clay content—22 to 30 percent
Content of sand that is fine and coarser—5 to 15 percent
Coarse fragment content—0 to 5 percent

A horizon:
Value—3 or 4 dry, 2 or 3 moist

Cg horizon (upper part):
Value—5 to 7 dry, 3 to 5 moist
Texture—silt loam or silty clay loam
Clay content—25 to 34 percent
Reaction—neutral or mildly alkaline

Cg horizon (lower part):
Value—5 to 7 dry, 3 to 5 moist
Texture—silt loam, loam, or clay loam
Gravel content—0 to 15 percent
Clay content—20 to 32 percent
Reaction—neutral or mildly alkaline

Wilkins Series

Taxonomic class: Fine, montmorillonitic, frigid Xeric Argialbolls

Depth class: Very deep
Drainage class: Somewhat poorly drained
Permeability: Very slow
Landform: Drainageways on plateaus
Parent material: Loess, alluvium
Slope range: 0 to 5 percent
Elevation: 2,800 to 4,500 feet
Climatic data (average annual):
Precipitation—23 to 25 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—90 to 110 days

Typical Pedon Description

A1—0 to 6 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many very fine and fine roots; common very fine irregular and tubular pores; moderately acid (pH 6.0); gradual smooth boundary.
A2—6 to 15 inches; dark grayish brown (10YR 4/2) silt loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to weak medium granular; hard, friable, slightly sticky and slightly plastic; common very fine and fine roots; many very fine tubular pores; moderately acid (pH 6.0); abrupt irregular boundary.
E—15 to 20 inches; light gray (10YR 7/1) silt loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; slightly hard, firm, slightly sticky and slightly plastic; few fine roots; few very fine tubular pores; many prominent continuous skeletans on faces of peds; few fine rounded iron and manganese concretions; moderately acid (pH 6.0); abrupt wavy boundary.
2Bt—20 to 26 inches; pale brown (10YR 6/3) and grayish brown (10YR 5/2) silty clay, dark grayish brown (10YR 4/2) and very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure; very hard, firm, very sticky and very plastic; few fine roots; many very fine and fine tubular pores; few distinct discontinuous clay films on faces of peds and in pores; few prominent patchy skeletans on faces of prisms near upper boundary; few fine rounded iron and manganese concretions; slightly acid (pH 6.4); gradual wavy boundary.
2Btg1—26 to 40 inches; light gray (2.5Y 7/2) silty clay, dark grayish brown (2.5Y 4/2) moist; many fine faint mottles that are olive brown (2.5Y 4/4) when moist; weak medium and coarse angular blocky structure; very hard, firm, very sticky and very plastic; few very fine roots; many very fine and fine tubular pores; few faint discontinuous clay films on faces of peds; few fine rounded iron and manganese concretions; neutral (pH 6.8); gradual wavy boundary.
2Btg2—40 to 52 inches; light brownish gray (2.5Y 6/2) silty clay, very dark grayish brown (2.5Y 3/2) moist; common medium prominent mottles that are yellowish brown (10YR 5/6) when moist and common fine prominent mottles that are gray (5Y 5/1) when moist; weak medium and coarse angular blocky structure; slightly hard, firm, very sticky and very plastic; few very fine tubular pores; few fine rounded iron and manganese concretions; neutral (pH 6.8); clear wavy boundary.
2BC—52 to 64 inches; light olive gray (5Y 6/2) clay loam, olive (5Y 5/3) moist; many medium prominent mottles that are yellowish brown (10YR 5/6) when moist and common fine prominent

mottles that are gray (5Y 5/1) when moist; massive; slightly hard, firm, sticky and plastic; neutral (pH 6.8).

Typical Pedon Location

Map unit in which located: Wilkins silt loam, 0 to 5 percent slopes
Location in survey area: About 2 miles north of Winchester, in Lewis County; about 1,840 feet north and 700 feet east of the southwest corner of sec. 19, T. 34 N., R. 2 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 19 inches
Depth to seasonal perched water table—15 to 20 inches in February through May
Depth to 2Bt horizon—18 to 30 inches
Frequency of flooding—occasional for brief periods in March through May
Average summer soil temperature—59 to 62 degrees F

A horizon:
Value—3 or 4 dry, 2 or 3 moist
Chroma—1 or 2 dry or moist
Reaction—moderately acid to neutral

E horizon:
Value—6 to 8 dry, 4 to 6 moist
Chroma—1 or 2 dry or moist
Clay content—10 to 20 percent
Reaction—moderately acid to neutral

2Bt horizon:
Hue—2.5Y or 10YR
Value—4 to 7 dry, 3 to 6 moist
Chroma—2 to 4 dry or moist
Clay content—40 to 50 percent
Reaction—slightly acid or neutral

2BC horizon (absent in some pedons):
Texture—clay loam or silty clay loam
Clay content—27 to 40 percent

Wistona Series

Taxonomic class: Coarse-loamy, mixed, mesic Fluventic Haploxerolls

Depth class: Very deep
Drainage class: Well drained
Permeability: Moderate
Landform: Low terraces, flood plains
Parent material: Alluvium
Slope range: 0 to 3 percent
Elevation: 720 to 1,240 feet
Climatic data (average annual):
Precipitation—12 to 14 inches
Air temperature—52 to 53 degrees F
Frost-free season (32 degrees F)—175 to 195 days

Typical Pedon Description

A—0 to 8 inches; brown (10YR 5/3) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium platy structure parting to moderate medium granular; soft, friable, nonsticky and slightly plastic; many fine and very fine roots; common fine and very fine tubular pores; abundant sand-sized mica flakes; neutral (pH 7.2); clear smooth boundary.
Bw1—8 to 18 inches; brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; less than 2 percent fine gravel; abundant sand-sized mica flakes; mildly alkaline (pH 7.4); gradual smooth boundary.
Bw2—18 to 45 inches; yellowish brown (10YR 5/4) fine sandy loam, brown (10YR 4/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; abundant sand-sized mica flakes; mildly alkaline (pH 7.6); clear wavy boundary.
Bk—45 to 51 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine roots; few fine and very fine tubular pores; slightly effervescent (2 percent calcium carbonate equivalent); very few fine rounded soft masses of carbonates; less than 2 percent fine gravel; moderately alkaline (pH 8.2); clear wavy boundary.
C1—51 to 55 inches; brown (10YR 5/3) fine sandy loam, brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few fine and very fine tubular pores; strongly effervescent (3 percent calcium carbonate equivalent); disseminated carbonates; 5 percent fine gravel; strongly alkaline (pH 8.8); clear wavy boundary.
C2—55 to 64 inches; brown (10YR 5/3) sandy loam, brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine and very fine tubular pores; strongly effervescent (3 percent calcium carbonate

equivalent); disseminated carbonates; less than 2 percent fine gravel; strongly alkaline (pH 8.8).

Typical Pedon Location

Map unit in which located: Wistona very fine sandy loam, 0 to 3 percent slopes
Location in survey area: About 4 miles west of Spalding, in Nez Perce County; about 1,900 feet south and 2,150 feet west of the northeast corner of sec. 25, T. 36 N., R. 4 W.

Range in Characteristics

Profile:
Thickness of mollic epipedon—10 to 20 inches
Depth to secondary carbonates—43 to 60 inches or more
Average annual soil temperature—54 to 55 degrees F
Frequency of flooding—rare

Particle-size control section (weighted average):
Clay content—5 to 10 percent
Gravel content—less than 5 percent

A horizon:
Value—4 or 5 dry, 2 or 3 moist
Reaction—neutral or mildly alkaline

Bw horizon:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam, fine sandy loam, or sandy loam
Fine gravel content—less than 5 percent
Clay content—5 to 12 percent
Reaction—mildly alkaline or moderately alkaline

Bk and C horizons:
Value—5 or 6 dry, 3 or 4 moist
Chroma—3 or 4 dry or moist
Texture—very fine sandy loam, fine sandy loam, or sandy loam
Gravel content—less than 5 percent
Clay content—4 to 10 percent
Calcium carbonate equivalent—1 to 5 percent
Reaction—moderately alkaline or strongly alkaline

Zaza Series

Taxonomic class: Loamy-skeletal, mixed, frigid Lithic Xerochrepts

Depth class: Shallow
Drainage class: Well drained
Permeability: Moderate
Landform: Hills on high plateaus
Parent material: Loess, material weathered from basalt
Slope range: 4 to 30 percent
Elevation: 4,200 to 5,350 feet
Climatic data (average annual):
Precipitation—26 to 28 inches
Air temperature—42 to 44 degrees F
Frost-free season (32 degrees F)—60 to 80 days

Typical Pedon Description

A—0 to 4 inches; brown (7.5YR 4/3) very stony loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure; soft, friable, nonsticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular and irregular pores; 25 percent gravel, 5 percent cobbles, and 5 percent stones; slightly acid (pH 6.1); clear smooth boundary.
Bw1—4 to 8 inches; brown (7.5YR 4/4) very cobbly loam, dark brown (7.5YR 3/4) moist; weak medium subangular blocky structure parting to moderate fine granular; soft, friable, nonsticky and slightly plastic; many very fine and fine roots; common very fine and fine tubular pores; 20 percent gravel and 30 percent cobbles; moderately acid (pH 5.9); clear wavy boundary.
Bw2—8 to 14 inches; brown (7.5YR 4/4) extremely cobbly loam, dark brown (7.5YR 3/4) moist; moderate fine subangular blocky structure; soft, friable, nonsticky and slightly plastic; common very fine and fine roots matted on coarse fragments; common very fine and fine tubular pores; 20 percent gravel and 50 percent cobbles; moderately acid (pH 5.9); abrupt wavy boundary.
R—14 inches; fractured basalt.

Typical Pedon Location

Map unit in which located: Larabee-Zaza-Seddow complex, 10 to 40 percent slopes
Location in survey area: About 1 mile northeast of Zaza, in Nez Perce County; about 380 feet south and 500 feet west of the northeast corner of sec. 33, T. 32 N., R. 4 W.

Range in Characteristics

Profile:
Depth to bedrock—10 to 20 inches
Base saturation—60 to 80 percent
Average annual soil temperature—44 to 46 degrees F

Particle-size control section (weighted average):
Clay content—10 to 18 percent
Coarse fragment content—50 to 85 percent

A horizon:
Chroma—3 or 4 dry, 2 or 3 moist
Reaction—moderately acid or slightly acid

Bw1 horizon:
Value—4 or 5 dry
Texture—cobbly loam or very cobbly loam
Coarse fragment content—20 to 60 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

Bw2 horizon:
Texture—very cobbly loam or extremely cobbly loam
Coarse fragment content—50 to 85 percent
Clay content—10 to 18 percent
Reaction—moderately acid or slightly acid

Formation of the Soils

Soil is a natural body that covers the surface of the earth and in which plants grow. It is a fundamental part of any land ecosystem and exists in dynamic balance with the other components of the environment.

Soils are characterized by their vertical sequence of layers, or horizons, that vary in color, texture, chemistry, or structure. Horizons are continually forming, usually over long periods of time, in response to environmental forces. These forces, referred to as soil-forming factors, are parent material, climate, biological forces, relief, and time. The combined action of these forces results in soil formation, although one or two forces may be dominant in any given area. Particular combinations of the soil-forming factors produce unique soil profiles.

In this section, general information about the influence of the soil-forming factors on soil formation in this survey area is given and the formation of specific soils on major landforms is discussed.

Parent Material

The soils in the survey area formed in loess, colluvium, alluvium, volcanic ash, and residuum that were deposited singly or, more commonly, in mixtures. The physical geology of the area has controlled the distribution of the various kinds of parent material.

Most the survey area is underlain by Miocene basalt flows of the Columbia River group. The remaining areas are underlain by other kinds of rock, including granitic rock near Winchester and in the upper Clearwater Valley, metasediment on Craig Mountain, and mixed sedimentary and metamorphic rock along the canyons of the Snake and Salmon Rivers.

The lava flows began about 17 million years ago with the Imnaha basalt and ended about 6 million years ago with the Saddle Mountains basalt *(6)*. During the middle of this period, the Nez Perce Plateau, comprising Camas Prairie and Craig Mountain, was uplifted and the Lewiston Basin subsided. Erosion has created extensive canyons in the basalt, some of which are as much as 4,000 feet deep. The resulting landscape consists of broad, flat plateaus that are deeply dissected by steep-walled canyons.

The underlying bedrock has the greatest influence on soil parent material in the canyons. Geologic erosion has been active throughout the Quaternary, producing a mantle of colluvium on the canyonsides. Soils that formed in basalt colluvium, such as those of the Kettenbach series, generally are moderately fine textured and contain abundant rock fragments. Soils that formed in colluvium derived from granitic rock, such as those of the Johnson series, tend to be sandier and contain abundant fine gravel and few coarse pebbles and cobbles. The colluvial mantle on the north- and east-facing slopes generally is deeper and commonly is influenced by loess.

In contrast to the canyonsides, the tops of the plateaus have relatively low relief and are geologically stable. Loess accumulated on these surfaces throughout the Pleistocene *(5)*. The soils that formed in the loess are silty and do not contain coarse fragments. It appears that the loess was deposited in many separate episodes, and each episode was followed by a period of stability and soil formation. In the Palouse area of nearby eastern Washington, dozens of paleosols in deep exposures of loess have been documented. Three well-developed paleosols that span the past 36,000 years have been identified. The source of the latest loess deposits is thought to be sediment from the cataclysmic Pleistocene floods. This sediment was deposited in the Columbia Basin of southeastern Washington.

Soils that formed in alluvium are in the narrow valleys along the major rivers and their tributaries. The oldest identified alluvial deposit is the Clearwater Gravel, which consists of sand and gravel from the ancestral Clearwater River deposited during the late Pliocene or early Pleistocene *(9)*. This material is exposed only in local areas where the younger overlying alluvium has been eroded. The substratum of the Tammany soils formed either in this material or in deposits of this material that have been reworked.

A younger and more extensive alluvial deposit consists of the backwater sediment from the Pleistocene Missoula Floods, which is correlated to the Touchet Beds of southeastern Washington *(24)*.

The Missoula Floods were a series of enormous floods that surged through eastern Washington periodically throughout the late Pleistocene and created the Channeled Scablands *(10)*. Some of the enormous volume of floodwater backed up the Snake River and inundated the lower Snake and Clearwater Valleys, including the Lewiston Basin. There is evidence of as many as 17 separate flood pulses that occurred 17,000 to 12,000 years ago near Lewiston. Deposits from floods during this period have been identified as "Bretz Floods" sediment to distinguish them from older deposits that have been identified as "Ancient Missoula Floods" sediment *(2)*. Because both types of sediment may be in this survey area, the general term "Missoula Floods" sediment is used.

The floodwater reached an elevation of about 1,325 feet, nearly the level of the west end of Lewiston Orchards. Sediment from the floods is medium-textured and contains a very low content of gravel. Soils of the Chard series developed mainly in Missoula Floods sediment.

Younger alluvium (less than 13,000 years old) formed the terraces below the Missoula Floods deposits and above the recent flood plain. This material is from the upstream canyons and plateaus. The coarser fractions are derived mostly from basalt, and the finer fractions are derived from loess. The soils that developed in this alluvium have sand and gravel at various depths. Soils of the Bridgewater and Lapwai series are examples.

A variable mixture of sand, gravel, cobbles, and loamy material is on the flood plains of the rivers and streams. The Joseph series and Aquents are examples of soils that formed in this recent, stratified alluvium. Alluvial material on the flood plains along drainageways on plateaus is derived from loess deposits, and it consists mostly of silty sediment. Soils of the Latahco series formed in this alluvium.

A surface mantle of volcanic ash has accumulated in some areas. The ash has been traced to the eruption of Mt. Mazama (now Crater Lake) in the Oregon Cascades about 6,600 years ago *(9)*. The mantle of ash is common at the higher elevations on Craig Mountain, particularly on the leeward north- and east-facing slopes. The mantle becomes thinner as elevation decreases, and at the lower elevations it is mixed with the underlying loess. The mantle typically is silt loam and as much as 24 inches thick. Soils of the Webbridge, Culdesac, and Shilla series are examples of those that formed in this material.

Climate

Climate has a very strong influence on soil formation in the survey area. It affects the weathering of minerals, the activity of micro-organisms, and the amount of water movement through the soil. Climate also influences the kind and amount of vegetation, which in turn affects soil development.

The present climate affects soil formation as have different climates throughout the Quaternary. For many of the older soils on plateaus, past climatic conditions may have had more influence on soil development than the present climatic conditions. The climate in the survey area is thought to have been warmer and drier in the early and middle Holocene. It was dry enough to allow grasses to invade much of the area that is now forested. Some of the forested soils have remnant characteristics of grassland, such as a thick, dark-colored surface horizon. This relict feature may be partly a result of past climatic conditions.

The present climate of the area is characterized by warm, dry summers and cool, moist winters. The dry season is most pronounced at the lowest elevations, near Lewiston. In most years, the precipitation during the cool season is only enough to moisten a loamy soil to a depth of about 30 to 40 inches. As elevation increases, the temperatures are cooler and the precipitation is higher. The dry season is less pronounced in these areas, and precipitation is sufficient to completely leach through the soil profile. Most of the soils in the survey area have a xeric moisture regime. Some of the soils on flood plains are saturated for significant periods and have an aquic moisture regime. The soil temperature regime ranges mainly from mesic, which is the warm extreme, to frigid, which is the cool extreme. The Webbridge soils, which have a cryic temperature regime and a udic moisture regime, are on the steep, north- and east-facing slopes on Craig Mountain.

The soil temperature regime changes from mesic to frigid at an elevation of 3,400 to 4,000 feet. At the highest elevations in the frigid zone, above about 4,600 feet, the soil temperatures in summer are low enough in many years to be considered cryic. These soils have been classified as frigid, however, because the length of the growing season and the forest habitat type seem to be more typical of frigid soils. The average annual soil temperature of some soils near Craigmont is mesic, but the summer soil temperature is cool enough to qualify as cryic in some years.

Perhaps the greatest effect of the climate in the survey area is the movement of clay and dissolved

components within the soil profile as a result of the moisture received. In areas at the lower elevations that have a semiarid climate, calcium carbonate is dissolved, leached downward, and then deposited as secondary carbonate. Calcic horizons form in areas where a considerable amount of carbonate has accumulated. Depth to a calcic horizon generally increases as precipitation increases. As the amount of precipitation reaches about 18 inches, carbonates are leached out of the profile entirely. Once the carbonates have been removed, suspended clay is more prone to translocation. Argillic horizons form in areas where an appreciable amount of clay has accumulated. Argillic horizons are very common in soils at the middle to high elevations.

Vegetation

The vegetation of the past few thousand years has influenced soil formation, particularly that of the surface layer. In this survey area, the greatest effect of the vegetation is in the content of organic matter in the A horizon.

The native vegetation is bunchgrass prairie in the drier areas, where the average annual precipitation is 12 to 20 inches. Through decomposition of its deep and extensive root systems, this vegetative type has added much organic matter to the surface layer. The dark color of the surface layer in these areas is typical of a mollic epipedon; thus, these soils are classified as Mollisols. Soils in the 12- to 15-inch precipitation zone have the lowest organic matter content, 1 to 3 percent, of the grassland soils. As the average annual rainfall increases, the plant growth also increases and the organic matter content increases to as much as 7 percent. The A horizon of the soils in these wetter areas is distinctively black when moist. Examples are soils of the Nez Perce series.

As the native vegetation changes from prairie to forest, the organic matter content remains relatively high, 2 to 4 percent, in the ponderosa pine zone and the drier part of the Douglas fir zone. As the forest type changes to one with a dense canopy, which is typical in the grand fir zone, the organic matter content decreases because the understory growth decreases and the root systems are sparse and shallow. More organic matter is added to the soil by litter accumulating on the soil surface than by decomposition of root systems within the surface layer. The surface layer is lighter colored and scant organic matter is concentrated in the upper few inches, which is typical of an ochric epipedon. Thin O horizons are common. Examples of soils that formed under this forest type are those of the Cramont series.

Time

The effects of the soil-forming factors are tempered or accentuated by the length of time they have been acting on the soil. Time, or more specifically, geologic time, is a significant soil-forming factor.

Young soils on recent geomorphic surfaces have been subject to soil formation for only short periods of time; therefore, they have weakly expressed horizons. Examples are the Joseph and Wistona soils and Aquents, which developed in Holocene deposits. Other soils formed in older parent material, but they exhibit the characteristics of younger soils because they are on actively eroding slopes, such as steep canyonsides. Entic Haploxerolls and Crowers soils are examples.

Soils on older geomorphic surfaces develop features, such as a calcic, argillic, or natric horizon, that are characteristic of more advanced profile development. The longer the period of soil formation, the more pronounced these horizons become.

In this survey area, the oldest soils and those that have the most pronounced profiles are on plateaus. Although the plateaus have a surface mantle of late Pleistocene loess, many of the soils have a subsoil that formed in older loess deposits, much older in some areas. The subsoil commonly is older than the present geomorphic surface. Abrupt and fine-textured argillic horizons and indurated duripans are considered relict horizons that formed during a previous episode of soil formation. Soils of the Nez Perce and Endicott series are examples of soils that have relict horizons.

Relief

Relief of the land surface affects soil development by influencing soil drainage, erosion, and microclimate.

Soils in low-lying positions commonly have features that are associated with poor soil drainage, including a high content of organic matter in the surface layer, gleyed and mottled colors, and redoximorphic features. Examples are Aquolls and soils of the Wilkins series.

Soils on steep canyonsides are strongly influenced by relief, particularly by the slope gradient and aspect. Geologic erosion is relatively rapid on the steep slopes; thus, the soils have weakly expressed

horizons. Soils on the steep slopes also are well drained. Soils on south- and west-facing slopes receive more direct sunlight and are therefore warmer and drier. Conversely, soils on north- and east-facing slopes are cooler and more moist. Also, more windblown material, such as loess or volcanic ash, tends to accumulate on these soils. Soils on the north- and east-facing slopes of plateaus, although not as steep as those on the canyonsides, have similar characteristics and they receive more moisture as a result of drifting snow.

Soil Formation on Major Landforms

This section explains in more detail the formation and taxonomic features of representative soils. The interaction of the soil-forming factors is illustrated by a description of the sequences of soil development on major landforms.

Flood Plains and Terraces

The flood plains of the major rivers and their tributaries are young geomorphic surfaces with soils that exhibit weak development. Aquents and Joseph soils are the youngest soils in the area. They formed in relatively unaltered parent material, and they have only an ochric epipedon. Soils of the Wistona, Lapwai, and Bridgewater series formed in older parent material on a terrace, probably of the early Holocene. The Wistona soils (Fluventic Haploxerolls) and the Lapwai soils (Cumulic Haploxerolls) have developed a mollic epipedon and a weak accumulation of secondary carbonates. The stratified parent material reflects periodic deposition of sediment by floods. The Bridgewater soils (Cumulic Haploxerolls) developed in gravelly, coarse-textured material. These soils are leached of carbonates, probably because of the low inherent level of carbonates in the parent material and because of the very rapid permeability of the substratum. The Bridgewater soils have developed a thick mollic epipedon.

Backwater deposits from the Missoula Floods have formed a terrace above the Holocene terrace. In most places this deposit mantled the pre-existing landforms; thus, it is not a typical flat and well-defined terrace. This deposit originated downstream from the survey area, and it consists of material that is unrelated to any upstream erosional surface.

Missoula Floods sediment that is mixed with small amounts of loess and has had the upper part reworked somewhat by wind is the parent material of the Chard and Uhlig soils. The Chard soils (Calcic Haploxerolls) developed a mollic epipedon and a distinct layer of carbonate accumulation. The Uhlig soils (Pachic Haploxerolls) formed in a higher precipitation zone. The increased moisture promoted greater plant growth, which contributed to the development of a thick mollic epipedon. Carbonates have been leached from the soil profile.

Plateaus

Soil profile development on the plateaus has produced a complex pattern and sequence of soils. The kinds of soil horizons that formed commonly have been determined by the occurrence and location of paleosols within the modern profile. The variations in climate also strongly influence soil development and result in a gradual continuum in the expression of soil features.

At the low elevations, soil development is strongly influenced by the alkalinity of the loess and the lack of leaching in areas of semiarid climate. South of Lewiston, the soils are underlain by a thick, strongly cemented or indurated duripan. The duripan is believed to be a relict feature of several periods of soil formation, probably dating back to the middle Pleistocene or older. Above the duripan is loess of the late Pleistocene. The young age of the loess is exhibited by the weak development of the soil horizons. The Endicott soils (Haplic Durixerolls) have only a cambic horizon and a calcic horizon overlying the duripan. The calcic horizon has an extremely high level of carbonates (40 to 80 percent calcium carbonate equivalent), and it probably is older than the cambic horizon. Several layers of loess could have been deposited, could have added translocated carbonates to the calcic horizon, and then could have been eroded away prior to the deposition of the loess that comprises the present solum.

Sodium has affected soil development markedly at the low elevations. The sodium is presumed to be a natural component of one or more of the young loess deposits that blanketed the region. The nearby Missoula Floods sediment is a probable local source of the loess. It contains appreciable quantities of sodium salts. At two random locations, samples were collected from deep layers of this sediment. Both samples contained significant levels of sodium, indicated by the percentage of exchangeable sodium (32 and 35 percent) and the sodium adsorption ratio (19 and 21). This local deposit of Missoula Floods sediment is of small extent and could not be expected to have produced a large volume of loess. If the Missoula Floods sediment in other locations contains levels of sodium similar to those measured in this local deposit, it could be inferred that there was a more widespread and effective source of loess-borne sodium.

The influence of sodium is evident in the natric horizon of the soils of the Bryden, Hatwai, and Redmore series. These soils generally occur as small slick spots surrounded by soils that do not have a natric horizon. The genesis of the natric horizon is thought to be influenced by the lateral flow of moisture in the subsoil *(12)*. Water dissolves sodium and other constituents as it leaches into the subsoil. As the soil dries, often in irregular patterns that follow the microtopography, this moisture and its solutes move laterally from moister areas to drier areas. Evaporating moisture leaves its solutes behind, and over time, the solutes, including sodium, are concentrated in areas where evaporation is greatest and are depleted in other areas. Natric horizons form in areas where sodium has accumulated and promoted dispersion and illuviation of clay. Incipient natric horizons, because of their slower permeability, encourage this cycling by keeping the underlying subsoil drier than that of surrounding sites and maintaining the moisture gradient. The moisture gradient encourages the movement of soil moisture, along with its dissolved sodium, from moister areas to drier areas. Well developed natric horizons are presumed to form as a result of this action. As precipitation increases, the natric horizons of the soils in this survey area become more pronounced. The Bryden soils (Typic Durixerolls) and the Hatwai and Redmore soils (Typic Natrixerolls) illustrate the increasing expression of natric horizons.

At the higher elevations where rainfall also is higher, carbonates are leached from the soil profile. The surface horizons are darker and contain more organic matter, and argillic horizons form in the subsoil. Soils of the Naff, Palouse, and Thatuna series are typical of those in the hilly Palouse area. The deep loess in this area contains at least one paleosol within the modern profile. This paleosol makes up the argillic horizon of the Naff soils (Ultic Argixerolls) and the Thatuna soils (Boralfic Argixerolls). The argillic horizon of the Thatuna soils is at a greater depth than that in the Naff soils, largely because the Thatuna soils are in leeward positions on steep, north- and east-facing slopes. The paleosol of the Thatuna soils somehow developed a compactness that slows permeability. This forces percolating water to perch above the subsoil and move much faster laterally than downward. A pronounced eluvial horizon has formed. The Palouse soils (Pachic Ultic Haploxerolls) formed in similar positions, but in areas where the paleosol was buried more deeply or more gradually. Only a cambic horizon has formed in the recent loess deposit that makes up the solum of the Palouse soils.

On the Camas Prairie near Craigmont and Nezperce, the loess deposits are thinner than those in the Palouse area and the topography is more subdued. Soils containing carbonates are scattered on the landscape, and the base saturation in the soils that are entirely leached of carbonates is moderate to high. The cool, moist climate in this area is favorable for the accumulation of organic matter, and thus the surface layer of the soils is characteristically black. Soils of the Nez Perce and Uhlorn series are dominant in this area.

The Nez Perce soils (Xeric Argialbolls) formed on the summits and shoulders of hills, generally on convex slopes. These soils have a thin layer of young loess overlying a paleosol that has a strongly expressed, clayey argillic horizon. The slow permeability of the argillic horizon causes water to flow laterally along the abrupt upper boundary. An albic horizon has formed above the argillic horizon. The restricted permeability has limited leaching of the solum. Accumulations of secondary carbonates are in the lower part of the argillic horizon, generally in a noncalcareous matrix. This suggests that the carbonates were added to a pre-existing soil that was completely leached of carbonates. Furthermore, the Bk horizon commonly is strongly alkaline and has elevated levels of sodium. This suggests that a young loess deposit containing considerable amounts of sodium and probably associated with the Natrixerolls to the west could also have affected the soils of the Camas Prairie, most notably the Nez Perce soils. This is also supported by the occurrence of Nez Perce soils in a small area near Waha, where they are adjacent to and appear to be close in morphology to the Redmore soils (Typic Natrixerolls). Additions of strongly alkaline loess may have contributed to the development of the pronounced argillic horizon in the Nez Perce soils by promoting dispersion and illuviation of clay, possibly strengthening the expression of a pre-existing argillic horizon. Leaching may have prevented sodium from accumulating and forming a true natric horizon, but the dispersion and illuviation of clay that took place was perhaps similar to that needed to form a natric horizon.

The Uhlorn soils (Typic Argixerolls) are closely associated with Nez Perce soils on the landscape. The Uhlorn soils typically are on plane to concave backslopes and footslopes. The argillic horizon is at a greater depth in these soils than in the Nez Perce soils and is more weakly expressed, but it appears to have formed in the same paleosol. Because of the position of the Uhlorn soils on the landscape, more loess and admixtures of slope alluvium may have been deposited in areas of these soils. The more rapid permeability of the argillic horizon appears to have allowed carbonates to be leached out of the solum. If

sodium was added to the soil through a young deposit of loess, it had a minimal effect in the formation of the argillic horizon. The effect of the alkaline loess on increasing the base saturation in the Uhlorn soils, however, probably has been significant.

As precipitation increases in areas beyond the Palouse and Camas Prairie areas, the native vegetation becomes ponderosa pine forests. Soils of the Southwick, Driscoll, and Larkin series commonly are in these areas. The content of organic matter is higher in these soils and more carbonates have been leached from the solum, but otherwise these soils are closely related to the sequence of paleosols common in the soils on Camas Prairie.

The Southwick soils (Boralfic Argixerolls) have a sequence of horizons very similar to that in the Thatuna soils. The Southwick soils, however, have an argillic horizon with some properties of a fragipan, particularly the high bulk density and coarse prismatic structure. These soils generally are on backslopes and footslopes.

The Driscoll soils (Ultic Palexerolls) are on the summits and shoulders of hills. As in the Nez Perce soils, which are in similar positions, the Driscoll soils have a pronounced relict, clayey argillic horizon. In the Driscoll soils, however, all of the carbonates have been leached from the argillic horizon. This horizon is presumed to have formed in a paleosol similar to that in the Southwick soils. The organic matter content in the mollic epipedon of the Driscoll soils is not quite as high as that in the Nez Perce soils. This reflects the effect of the forest vegetation on the development of the Driscoll soils.

The Larkin soils (Ultic Argixerolls) formed on backslopes and footslopes in areas where each successive deposit of loess was thicker. The argillic horizon in these soils does not have characteristics of a fragipan nor does it have an abrupt boundary.

The Taney and Setters soils formed in the Douglas fir zone at higher elevations, where the soil temperature regime is frigid. The Taney soils (Vitrandic Argixerolls) are very similar to the Southwick soils and are on similar landscape positions. The Taney soils, however, have a fragipan. The Setters soils (Ultic Palexerolls) have an abrupt clay increase at the top of the argillic horizon.

The formation of a fragipan in the soils in the survey area is not well understood. The variety of characteristic features suggests a complex genesis that probably is a result of many independent processes. Some of the fragipan features, such as the thick organic coatings and clay films on the faces of prisms and the skeletans on the tops and sides of prisms, can be attributed to pedogenic processes. Other features, such as the high bulk density, the coarse prismatic structure, and the close relationship between the fragipans and horizon discontinuities, suggest a geologic influence. In this survey area, it appears that the fragipans formed in a previously compacted layer in the upper part of a paleosol. The cause of the compaction is not known, but several geologic processes are plausible, including periglacial solifluction and thawing of permafrost. Both of these processes could have produced a slurried material that could become dense when dry. The occurrence of a fragipan only in areas that support forest vegetation suggests that climate had a role in the formation of the compacted layers.

After the paleosol was buried by loess, pedogenic features could have been superimposed on the compacted layer. The low porosity of the compacted layer could have restricted soil water movement and resulted in the characteristic patterns of depletion and accumulation of clay. Illuvial clay may have filled some of the scarce pores with clay and cemented some of the larger mineral grains. The fragipans commonly have relatively low shrink-swell potential compared to adjacent soils.

Many characteristics of the Taney and Setters soils suggest a relationship with the sodium influence of the Nez Perce soils and the Natrixerolls of drier climates. The similarities include an abrupt upper boundary of the argillic horizon (fragipan), prismatic structure or in some areas columnar structure capped with albic material, and illuvial organic matter on the faces of peds. The proximity of these soils to the Nez Perce soils implies that if the young loess affecting the Nez Perce soils contained appreciable amounts of sodium then the loess affecting the Taney and Setters soils probably did as well. Both soils are downwind from areas of natric soils and Missoula Floods sediment, which are possible local sources of alkaline loess. The fragipans in this area may have been influenced by sodium, which has now been leached from the soils.

The Cramont and Talmaks soils formed in the climatic zone that is associated with grand fir plant communities. As a direct effect of this change in plant communities, these soils have an ochric epipedon instead of the mollic epipedon that is so common in the soils in the drier zones. The mantle of young loess also exhibits more influence by volcanic ash. The surface layer of the Cramont and Talmaks soils (Vitrandic Haploxeralfs) is about 5 to 30 percent volcanic glass. The argillic horizon of the soils in this precipitation zone shows the effects of more leaching—base saturation is significantly lower than in the drier zones and the clay mineralogy is

different, with smectite becoming less dominant and kaolinite and vermiculite becoming more dominant.

At the highest elevations on the plateaus, the soils are more influenced by volcanic ash and have minimal amounts of loess. Soils of the Shilla, Seddow, and Larabee series are dominant in these areas. Soils of the Shilla series (Alfic Vitrixerands) formed on landscape positions that are favorable for the accumulation of volcanic ash, commonly summits and north- and east-facing hillsides. These soils have a mantle of ash 14 to 20 inches thick. This mantle has a higher content of volcanic glass than the surface layer of the Cramont and Talmaks soils, but it also has a component of loess. Soils of the Seddow series (Vitrandic Haploxeralfs) formed in areas where the mantle of ash is thinner as a result of less deposition or more erosion, or both. Soils of the Larabee series (Vitrandic Argixerolls) formed on dry, south- and west-facing hillsides. The moderate depth to basalt and high content of rock fragments typical of these soils restrict the available water capacity and result in droughtiness. The Larabee soils support a Douglas fir plant community, which is drought tolerant, and they have developed a mollic epipedon as a result of the accumulation of organic matter in the surface layer.

Canyons

Soils on canyonsides typically are more weakly developed than soils on plateaus. The colluvial parent material is younger, and geologic erosion is active. Aspect and climate have the greatest influence on the formation of soils on canyonsides (fig. 28).

At the lowest elevations and in the driest areas, the soils have accumulations of calcium carbonate but they do not exhibit evidence of clay movement. Soils of the Limekiln and Lickskillet series (Lithic Haploxerolls) are on the south- and west-facing slopes in these areas. These soils formed in a thin mantle of basalt colluvium. Soils of the Crowers series (Calcic Pachic Haploxerolls) are on the north- and east-facing slopes. These soils formed in a thicker colluvial deposit that has additions of loess in the upper part. Because the Crowers soils are deeper and are on the cooler, more moist aspects, they support an Idaho

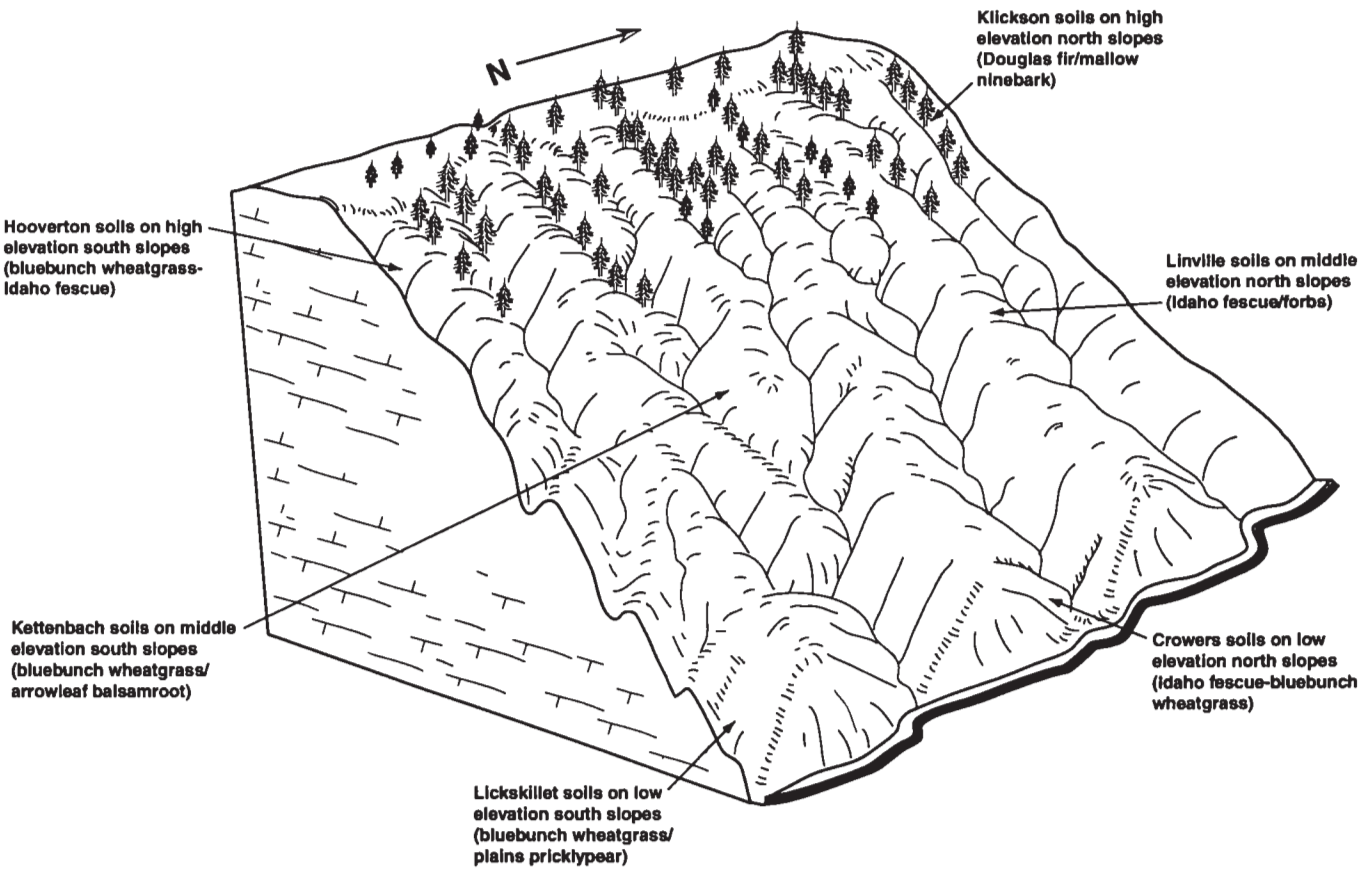

N
Klickson soils on high elevation north slopes (Douglas fir/mallow ninebark)
Hooverton soils on high elevation south slopes (bluebunch wheatgrass-Idaho fescue)
Linville soils on middle elevation north slopes (Idaho fescue/forbs)
Kettenbach soils on middle elevation south slopes (bluebunch wheatgrass/ arrowleaf balsamroot)
Crowers soils on low elevation north slopes (Idaho fescue-bluebunch wheatgrass)
Lickskillet soils on low elevation south slopes (bluebunch wheatgrass/ plains pricklypear)

Figure 28.—Idealized sequence of soils and vegetation types on north- and south-facing slopes of basalt canyonsides.

fescue plant community that characteristically adds much organic matter to the surface layer and subsoil. There is a striking difference in the content of organic matter between the Limekiln and Lickskillet soils and the Crowers soils.

As precipitation increases, soils on the south- and west-facing slopes can support more productive plant communities; however, the pattern of deeper soils and more productive plant communities that occurs on the north- and east-facing slopes is still evident. On south- and west-facing slopes, increased leaching has removed carbonates from the profile but not an appreciable amount of bases. Leaching also has facilitated the movement of clay. Soils of the Kettenbach series (Pachic Argixerolls) formed under these conditions. On the north- and east-facing slopes, the accumulation of organic matter remains high but the movement of clay has not been sufficient for an argillic horizon to form. Soils of the Linville series (Pachic Haploxerolls) formed on these slopes.

As elevation increases, the Douglas fir forest type is the dominant potential plant community on the cool, moist aspects. The soils that support this plant community have a thinner mollic epipedon than do the soils on the lower canyonsides that support grassland plant communities. In the forested soils, leaching has been sufficient for the removal of bases and for the formation of an argillic horizon. Soils of the Klickson series (Vitrandic Argixerolls) are examples.

On the dry aspects at the higher elevations, available soil moisture is not limited by climate but by the depth to bedrock, high content of rock fragments, and resulting low available water capacity. The soils on these aspects can only support a grassland plant community. Leaching has not significantly removed the bases, and the mollic epipedon is thinner in these soils than in those at the lower elevations. Soils of the Hooverton series (Typic Argixerolls) are examples.

At the headwalls of canyons on Craig Mountain, a thick mantle of volcanic ash overlies the basalt colluvium on the north and east aspects. Soils of the Webbridge series (Alfic Vitricryands) formed on these aspects, and they support the grand fir forest type. These soils are light colored and thoroughly leached of bases. A weak argillic horizon has formed.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Alpha,alpha-dipyridyl. A dye that when dissolved in 1N ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction indicates a type of redoximorphic feature.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions. Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Argillic horizon. A subsoil horizon characterized by an accumulation of illuvial clay.

Aspect. The direction in which a slope faces.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	more than 9

Backslope. The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope. A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding system. A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography. A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions. Low-chroma zones having a low content of iron, manganese, and clay because of the chemical reduction of iron and manganese and the removal of iron, manganese, and clay. A type of redoximorphic depletion.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Coarse fragments. Mineral or rock fragments larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping.

The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Concretions. Cemented bodies with crude internal symmetry organized around a point, a line, or a plane. They typically take the form of concentric layers visible to the naked eye. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up concretions. If formed in place, concretions of iron oxide or manganese oxide are generally considered a type of redoximorphic concentration.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the "Soil Survey Manual."

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosion. Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross fencing. Fencing that divides a pasture into two or more areas and allows for managing the distribution of livestock.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing land for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion.

This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained.* These classes are defined in the "Soil Survey Manual."

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Duripan. A continuous, strongly silica-cemented or indurated soil horizon, or layer, that severely limits root and water penetration.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation. A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation. A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Excess sulfur (in tables). Excessive amount of sulfur in the soil. The sulfur causes extreme acidity if the soil is drained, and the growth of most plants is restricted.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a

stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Footslope. The position that forms the inner, gently inclined surface at the base of a hillslope. In profile, footslopes are commonly concave. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Gradient terrace. A terrace constructed to move water to a stable outlet. (See Terrace.)

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water. Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head out. To form a flower head.

Head slope. A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the

surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties are depth to a seasonal high water table, the infiltration rate and permeability after prolonged wetting, and depth to a very slowly permeable layer. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Interfluve. An elevated area between two drainageways that sheds water to those drainageways.

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions. Low-chroma zones having a low content of iron and manganese oxide because of chemical reduction and removal, but having a clay content similar to that of the adjacent matrix. A type of redoximorphic depletion.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit. Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low-residue crops. Such crops as corn used for

silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Masses. Concentrations of substances in the soil matrix that do not have a clearly defined boundary with the surrounding soil material and cannot be removed as a discrete unit. Common compounds making up masses are calcium carbonate, gypsum or other soluble salts, iron oxide, and manganese oxide. Masses consisting of iron oxide or manganese oxide generally are considered a type of redoximorphic concentration.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon. A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Munsell notation. A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon. A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules. Cemented bodies lacking visible internal structure. Calcium carbonate, iron oxide, and manganese oxide are common compounds making up nodules. If formed in place, nodules of iron oxide or manganese oxide are considered types of redoximorphic concentrations.

Nose slope. A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent.

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment. A thin layer of alluvial material that mantles an erosion surface and has been transported to its present position from higher lying areas of the erosion surface.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area

ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Pulse crop. A crop that produces edible seeds, such as peas and lentils.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a

soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	less than 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Redoximorphic concentrations. Nodules, concretions, soft masses, pore linings, and other features resulting from the accumulation of iron or manganese oxide. An indication of chemical reduction and oxidation resulting from saturation.

Redoximorphic depletions. Low-chroma zones from which iron and manganese oxide or a combination of iron and manganese oxide and clay has been removed. These zones are indications of the chemical reduction of iron resulting from saturation.

Redoximorphic features. Redoximorphic concentrations, redoximorphic depletions, reduced matrices, a positive reaction to alpha,alpha-dipyridyl, and other features indicating the chemical reduction and oxidation of iron and manganese compounds resulting from saturation.

Reduced matrix. A soil matrix that has low chroma in situ because of chemically reduced iron (Fe II). The chemical reduction results from nearly continuous wetness. The matrix undergoes a change in hue or chroma within 30 minutes after exposure to air as the iron is oxidized (Fe III). A type of redoximorphic feature.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Second bottom. The first terrace above the normal flood plain (or first bottom) of a river.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shoulder. The position that forms the uppermost inclined surface near the top of a hillslope. It is a transition from backslope to summit. The surface is dominantly convex in profile and erosional in origin.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Side slope. A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Similar soils. Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant trees for the range in ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that shows the average height of dominant and codominant trees for the range in ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil generally is silty or clayey, is slippery when wet, and is low in productivity.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey, classes for simple slopes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 8 percent
Strongly sloping	8 to 15 percent
Moderately steep	15 to 25 percent
Steep	25 to 60 percent
Very steep	60 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to $Ca^{++} + Mg^{++}$. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and

sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit. The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. Some terraces are dissected by drainageways and have steep escarpments.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope. The position that forms the gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Windthrow. The uprooting and tipping over of trees by the wind.

Tables

Table 1.--Temperature and Precipitation

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

Month	Temperature						Precipitation			
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
LEWISTON:										
January	38.7	25.8	32.2	59	-4	29	1.24	0.56	1.82	3
February	46.2	30.5	38.4	63	6	57	0.88	0.45	1.26	3
March	53.4	34.0	43.7	72	18	146	1.07	0.66	1.43	3
April	62.2	39.3	50.8	84	26	323	1.09	0.48	1.61	3
May	70.7	46.1	58.4	93	32	573	1.46	0.82	2.03	4
June	79.0	53.0	66.0	99	40	784	1.43	0.66	2.09	4
July	89.0	58.6	73.8	106	46	1,050	0.60	0.17	0.97	1
August	87.9	58.0	72.9	105	45	1,019	0.75	0.14	1.32	2
September	77.7	50.0	63.8	98	34	713	0.76	0.24	1.22	2
October	63.1	40.7	51.9	84	25	373	0.97	0.40	1.53	3
November	48.0	33.4	40.7	67	13	100	1.16	0.59	1.67	4
December	40.8	28.5	34.6	59	1	32	1.16	0.52	1.71	3
Yearly:										
Average	63.0	41.5	52.3	---	---	---	---	---	---	---
Extreme	115	-22	---	107	-9	---	---	---	---	---
Total	---	---	---	---	---	5,200	12.57	10.70	14.37	35

See footnote at end of table.

Table 1.--Temperature and Precipitation--Continued

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
NEZPERCE:										
January	34.3	20.8	27.6	52	-11	5	1.81	1.00	2.52	6
February	40.5	25.0	32.7	59	-4	15	1.36	0.83	1.84	5
March	46.1	28.0	37.1	67	7	44	1.88	1.27	2.43	6
April	54.7	33.2	44.0	78	21	146	2.18	1.46	2.83	6
May	63.1	39.2	51.2	86	26	341	2.94	1.92	3.87	7
June	70.8	45.3	58.0	90	33	530	2.32	1.39	3.15	6
July	80.6	49.0	64.8	96	35	750	1.06	0.34	1.65	2
August	80.7	48.9	64.8	98	36	745	1.28	0.40	2.12	3
September	71.0	42.2	56.6	91	23	492	1.38	0.44	2.15	3
October	58.0	35.1	46.5	80	17	218	1.69	0.75	2.64	4
November	42.9	27.8	35.3	62	2	36	1.93	1.15	2.62	6
December	35.5	22.6	29.1	52	-9	6	1.70	0.95	2.36	5
Yearly:										
Average	56.5	34.8	45.6	---	---	---	---	---	---	---
Extreme	104	-33	---	99	-18	---	---	---	---	---
Total	---	---	---	---	---	3,326	21.51	17.25	24.86	59

See footnote at end of table.

Table 1.--Temperature and Precipitation--Continued

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average daily	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
WINCHESTER:										
January	34.4	17.9	26.2	52	-16	3	2.28	1.26	3.18	7
February	39.6	21.6	30.6	59	-11	9	1.73	0.99	2.38	5
March	43.9	24.7	34.3	63	-1	25	2.66	1.93	3.33	8
April	51.4	29.9	40.6	76	14	98	2.66	1.70	3.53	8
May	59.7	35.8	47.7	83	23	245	3.07	2.06	4.00	8
June	67.7	41.8	54.8	87	30	446	2.14	1.45	2.77	6
July	77.0	44.9	60.9	92	31	647	1.21	0.43	1.86	3
August	78.0	44.5	61.3	95	31	629	1.27	0.21	2.08	3
September	68.5	38.4	53.4	90	21	403	1.54	0.47	2.42	4
October	56.6	31.5	44.1	80	11	168	1.90	0.93	2.88	5
November	41.9	25.2	33.6	63	-5	31	2.46	1.41	3.40	8
December	34.8	18.7	26.7	52	-18	5	2.15	1.13	3.04	7
Yearly:										
Average	54.4	31.2	42.8	---	---	---	---	---	---	---
Extreme	98	-40	---	95	-25	---	---	---	---	---
Total	---	---	---	---	---	2,709	25.07	21.29	28.38	72

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
LEWISTON:			
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 2	Apr. 22	May 9
2 years in 10 later than--	Mar. 22	Apr. 13	May 2
5 years in 10 later than--	Feb. 29	Mar. 26	Apr. 18
First freezing temperature in fall:			
1 year in 10 earlier than--	Oct. 22	Oct. 13	Sept. 27
2 years in 10 earlier than--	Nov. 2	Oct. 20	Oct. 5
5 years in 10 earlier than--	Nov. 23	Nov. 3	Oct. 18
NEZPERCE:			
Last freezing temperature in spring:			
1 year in 10 later than--	Apr. 27	May 21	June 13
2 years in 10 later than--	Apr. 20	May 15	June 5
5 years in 10 later than--	Apr. 8	May 1	May 22
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 29	Sept. 11	Sept. 3
2 years in 10 earlier than--	Oct. 7	Sept. 19	Sept. 9
5 years in 10 earlier than--	Oct. 21	Oct. 2	Sept. 19

Table 2.--Freeze Dates in Spring and Fall--Continued

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
WINCHESTER:			
Last freezing temperature in spring:			
1 year in 10 later than--	May 14	June 9	July 20
2 years in 10 later than--	May 8	June 1	July 11
5 years in 10 later than--	Apr. 25	May 19	June 24
First freezing temperature in fall:			
1 year in 10 earlier than--	Sept. 15	Sept. 4	Aug. 13
2 years in 10 earlier than--	Sept. 22	Sept. 8	Aug. 20
5 years in 10 earlier than--	Oct. 4	Sept. 16	Sept. 3

Table 3.--Growing Season

(Recorded in the period 1949-92 at Lewiston, 1951-92 at Nezperce, and 1966-92 at Winchester, Idaho)

Probability	Daily minimum temperature during growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
LEWISTON:			
9 years in 10	218	177	148
8 years in 10	230	190	160
5 years in 10	254	214	182
2 years in 10	277	237	204
1 year in 10	289	250	216
NEZPERCE:			
9 years in 10	156	118	89
8 years in 10	164	128	99
5 years in 10	180	148	119
2 years in 10	196	167	138
1 year in 10	205	178	148
WINCHESTER:			
9 years in 10	114	83	31
8 years in 10	124	94	44
5 years in 10	144	113	69
2 years in 10	163	132	94
1 year in 10	173	142	106

Table 4.--Acreage and Proportionate Extent of the Soils

Map symbol	Soil name	Lewis	Nez Perce	Total-- Area	Extent
		Acres	Acres	Acres	Pct
1	Agatha loam, 15 to 40 percent slopes	40	325	365	*
2	Agatha loam, 40 to 75 percent slopes	260	1,790	2,050	0.2
3	Agatha-Rock outcrop complex, 35 to 75 percent slopes	135	1,770	1,905	0.2
4	Ahsahka silt loam, 15 to 40 percent slopes	300	0	300	*
5	Almota-Athena-Hatwai complex, 45 to 65 percent slopes	0	485	485	0.1
6	Almota-Linville complex, 30 to 50 percent slopes	20	2,170	2,190	0.3
7	Alpowa-Lickskillet complex, 15 to 35 percent slopes	0	2,710	2,710	0.3
8	Alpowa-Lickskillet complex, 35 to 50 percent slopes	0	4,560	4,560	0.5
9	Aquolls, nearly level	2,385	1,435	3,820	0.4
10	Athena silt loam, 20 to 45 percent slopes	0	480	480	0.1
11	Bakeoven-Watama complex, 10 to 35 percent slopes	0	690	690	0.1
12	Boles-Joel complex, 1 to 8 percent slopes	11,750	0	11,750	1.4
13	Bridgewater-Joseph complex, 1 to 3 percent slopes	585	2,735	3,320	0.4
14	Broadax silt loam, 2 to 8 percent slopes	0	5,401	5,401	0.6
15	Broadax silt loam, 8 to 20 percent slopes	0	4,770	4,770	0.6
16	Broadax-Hatwai complex, 1 to 8 percent slopes	45	7,725	7,770	0.9
17	Broadax-Hatwai complex, 8 to 15 percent slopes	0	4,690	4,690	0.5
18	Caldwell-Latah complex, 0 to 3 percent slopes	0	30	30	*
19	Calouse-Almota complex, 2 to 15 percent slopes	0	1,501	1,501	0.2
20	Calouse-Endicott-Bryden complex, 2 to 6 percent slopes	0	3,160	3,160	0.4
21	Carlinton silt loam, 2 to 10 percent slopes	3,960	0	3,960	0.5
22	Carlinton silt loam, 10 to 20 percent slopes	565	670	1,235	0.1
23	Carlinton-Talmaks complex, 2 to 8 percent slopes	1,695	0	1,695	0.2
24	Cavendish-Taney complex, 8 to 20 percent slopes	1,240	2,500	3,740	0.4
25	Chard silt loam, 2 to 10 percent slopes	0	1,940	1,940	0.2
26	Chard silt loam, 10 to 25 percent slopes	165	5,420	5,585	0.7
27	Chard silt loam, 25 to 45 percent slopes	0	1,395	1,395	0.2
28	Chard complex, 30 to 50 percent slopes	0	1,985	1,985	0.2
29	Chard-Tammany complex, 20 to 45 percent slopes	0	695	695	0.1
30	Chard-Urban land complex, gently sloping	0	1,200	1,200	0.1
31	Cramont silt loam, 2 to 10 percent slopes	3,280	70	3,350	0.4
32	Cramont-Culdesac complex, 2 to 20 percent slopes	3,770	12,540	16,310	1.9
33	Cramont-Seddow complex, 10 to 25 percent slopes	4,065	1,270	5,335	0.6
34	Crowers silt loam, 50 to 80 percent slopes	0	2,930	2,930	0.3
35	Driscoll silt loam, 3 to 12 percent slopes	1,015	520	1,535	0.2
36	Driscoll-Larkin complex, 2 to 10 percent slopes	1,405	5,685	7,090	0.8
37	Endicott-Bryden complex, 2 to 6 percent slopes	0	4,555	4,555	0.5
38	Endicott-Bryden complex, 6 to 12 percent slopes	0	2,385	2,385	0.3
39	Endicott-Oliphant complex, 8 to 20 percent slopes	0	1,120	1,120	0.1
40	Entic Haploxerolls, very steep	0	1,975	1,975	0.2
41	Gwin-Vollmer complex, 5 to 25 percent slopes	2,650	985	3,635	0.4
42	Haploxerolls, rolling	0	230	230	*
43	Hooverton stony loam, 35 to 75 percent slopes	6,225	7,905	14,130	1.7
44	Immig very stony clay loam, 40 to 80 percent slopes	1,385	2,525	3,910	0.5
45	Jacket silt loam, 3 to 12 percent slopes	400	1,400	1,800	0.2
46	Jacket silt loam, 12 to 30 percent slopes	1,215	3,230	4,445	0.5
47	Jacket-Larkin complex, 20 to 50 percent slopes	320	2,316	2,636	0.3
48	Joel silt loam, 1 to 8 percent slopes	445	0	445	0.1
49	Joel silt loam, 8 to 16 percent slopes	4,985	0	4,985	0.6
50	Joel-Setters complex, 2 to 10 percent slopes	6,625	90	6,715	0.8
51	Joel-Setters complex, 10 to 20 percent slopes	1,450	340	1,790	0.2
52	Johnson loam, 45 to 65 percent slopes	240	70	310	*
53	Johnson-Dragnot association, 40 to 70 percent slopes	9,890	1,400	11,290	1.3
54	Johnson-Kruse complex, 5 to 40 percent slopes	5,570	0	5,570	0.7
55	Johnson-Labuck complex, 15 to 35 percent slopes	3,555	0	3,555	0.4
56	Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded	0	665	665	0.1
57	Kettenbach-Gwin complex, 35 to 75 percent slopes	13,903	44,268	58,171	6.8
58	Kettenbach-Keuterville association, 35 to 75 percent slopes	3,852	18,425	22,277	2.6
59	Kettenbach-Rock outcrop complex, 45 to 90 percent slopes	4,380	2,155	6,535	0.8
60	Keuterville gravelly silt loam, 10 to 25 percent slopes	215	920	1,135	0.1
61	Keuterville gravelly silt loam, 25 to 50 percent slopes	130	2,700	2,830	0.3

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Lewis	Nez Perce	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
62	Keuterville-Rock outcrop complex, 35 to 90 percent slopes	875	1,700	2,575	0.3
63	Klickson silt loam, 15 to 35 percent slopes	715	1,005	1,720	0.2
64	Klickson silt loam, 35 to 90 percent slopes	4,755	11,485	16,240	1.9
65	Klickson-Agatha association, 35 to 75 percent slopes	1,470	3,160	4,630	0.5
66	Klickson-Hooverton association, 35 to 90 percent slopes	16,050	42,670	58,720	6.9
67	Klickson-Rock outcrop complex, 45 to 90 percent slopes	3,390	2,380	5,770	0.7
68	Klickson-Uptmor complex, 15 to 45 percent slopes	945	3,750	4,695	0.5
69	Kruse loam, 20 to 35 percent slopes	0	30	30	*
70	Lapwai-Bridgewater complex, 1 to 4 percent slopes	380	3,420	3,800	0.4
71	Larabee loam, 4 to 20 percent slopes	435	1,300	1,735	0.2
72	Larabee-Gwin association, 35 to 75 percent slopes	65	2,680	2,745	0.3
73	Larabee-Zaza-Seddow complex, 10 to 40 percent slopes	395	5,900	6,295	0.7
74	Larkin-Driscoll complex, 10 to 20 percent slopes	2,685	7,218	9,903	1.2
75	Latahco-Thatuna complex, 0 to 3 percent slopes	5	1,530	1,535	0.2
76	Lauby-Southwick complex, 15 to 35 percent slopes	2,790	0	2,790	0.3
77	Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes	0	14,145	14,145	1.7
78	Limekiln very stony silt loam, 40 to 60 percent slopes	0	6,255	6,255	0.7
79	Limekiln-Crowers association, 45 to 80 percent slopes	1,325	11,975	13,300	1.6
80	Linville silt loam, 40 to 70 percent slopes	400	6,525	6,925	0.8
81	Linville-Kettenbach association, 45 to 75 percent slopes	2,320	19,725	22,045	2.6
82	Linville-Waha complex, 25 to 45 percent slopes	160	9,035	9,195	1.1
83	Mallory-Jacket complex, 10 to 40 percent slopes	535	2,135	2,670	0.3
84	Maloney-Zaza complex, 5 to 20 percent slopes	3,310	2,580	5,890	0.7
85	Meland-Jacket complex, 5 to 20 percent slopes	735	3,200	3,935	0.5
86	Meland-Keuterville complex, 10 to 35 percent slopes	1,460	3,670	5,130	0.6
87	Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes	12,905	0	12,905	1.5
88	Naff silt loam, 20 to 30 percent slopes	0	665	665	0.1
89	Naff-Palouse complex, 2 to 8 percent slopes	0	6,527	6,527	0.8
90	Naff-Palouse complex, 8 to 20 percent slopes	0	18,265	18,265	2.1
91	Naff, eroded-Palouse complex, 8 to 20 percent slopes	0	2,945	2,945	0.3
92	Naff-Palouse-Garfield complex, 8 to 20 percent slopes	0	3,195	3,195	0.4
93	Naff-Thatuna complex, 2 to 10 percent slopes	25	2,110	2,135	0.2
94	Naff-Waha complex, 3 to 12 percent slopes	0	2,190	2,190	0.3
95	Naff-Waha complex, 12 to 25 percent slopes	255	4,355	4,610	0.5
96	Naff-Waha complex, 25 to 40 percent slopes	50	2,660	2,710	0.3
97	Nez Perce silty clay loam, 2 to 10 percent slopes	12,400	200	12,600	1.5
98	Nez Perce silty clay loam, dry, 1 to 4 percent slopes	0	1,320	1,320	0.2
99	Nez Perce-Uhlorn complex, 8 to 15 percent slopes	3,375	300	3,675	0.4
100	Oliphant silt loam, 1 to 4 percent slopes	0	5,120	5,120	0.6
101	Oliphant silt loam, 8 to 20 percent slopes	0	1,475	1,475	0.2
102	Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes	0	745	745	0.1
103	Oliphant-Alpowa complex, 20 to 40 percent slopes	0	540	540	0.1
104	Oliphant-Hatwai complex, 1 to 8 percent slopes	0	550	550	0.1
105	Oliphant-Stember complex, 8 to 20 percent slopes	0	1,327	1,327	0.2
106	Palouse-Athena complex, 2 to 8 percent slopes	0	3,040	3,040	0.4
107	Palouse-Athena complex, 8 to 20 percent slopes	160	6,295	6,455	0.8
108	Pits, gravel	0	40	40	*
109	Redmore silt loam, 1 to 6 percent slopes	0	2,690	2,690	0.3
110	Riverwash-Aquents complex, nearly level	5	900	905	0.1
111	Rock outcrop-Flybow complex, very steep	215	5,160	5,375	0.6
112	Seddow silt loam, 10 to 40 percent slopes	335	1,145	1,480	0.2
113	Setters silt loam, 2 to 8 percent slopes	1,140	820	1,960	0.2
114	Shilla silt loam, 2 to 12 percent slopes	0	2,065	2,065	0.2
115	Shilla-Seddow complex, 5 to 30 percent slopes	1,770	10,015	11,785	1.4
116	Slickpoo silt loam, 5 to 15 percent slopes	200	2,440	2,640	0.3
117	Slickpoo-Broadax complex, 15 to 25 percent slopes	0	5,440	5,440	0.6
118	Southwick silt loam, 3 to 12 percent slopes	2,315	2,565	4,880	0.6
119	Southwick-Bluesprin complex, 10 to 35 percent slopes	135	2,375	2,510	0.3
120	Southwick-Driscoll complex, 3 to 12 percent slopes	10,740	15,575	26,315	3.1
121	Southwick-Driscoll complex, 12 to 25 percent slopes	3,955	3,535	7,490	0.9

See footnote at end of table.

Table 4.--Acreage and Proportionate Extent of the Soils--Continued

Map symbol	Soil name	Lewis	Nez Perce	Total-- Area	Extent
		Acres	Acres	Acres	Pct
122	Southwick-Larkin complex, 12 to 25 percent slopes	1,655	8,865	10,520	1.2
123	Sweiting-Joel complex, 4 to 20 percent slopes	2,990	0	2,990	0.3
124	Talmaks silt loam, 2 to 8 percent slopes	2,685	0	2,685	0.3
125	Talmaks silt loam, 8 to 20 percent slopes	5,190	0	5,190	0.6
126	Talmaks-Seddow complex, 8 to 20 percent slopes	1,735	0	1,735	0.2
127	Tammany-Chard-Rock outcrop complex, 35 to 65 percent slopes	0	1,605	1,605	0.2
128	Taney silt loam, 3 to 10 percent slopes	70	1,705	1,775	0.2
129	Taney-Joel complex, 10 to 20 percent slopes	1,785	6,050	7,835	0.9
130	Taney-Joel complex, 20 to 40 percent slopes	730	445	1,175	0.1
131	Taney-Setters complex, 3 to 8 percent slopes	13,945	9,055	23,000	2.7
132	Taney-Setters complex, 8 to 20 percent slopes	1,135	2,090	3,225	0.4
133	Thatuna-Naff complex, 10 to 25 percent slopes	30	2,636	2,666	0.3
134	Thatuna-Naff, eroded complex, 10 to 25 percent slopes	0	5,391	5,391	0.6
135	Thatuna-Naff complex, 25 to 40 percent slopes	0	2,260	2,260	0.3
136	Thatuna-Naff-Tilma complex, 10 to 25 percent slopes	0	5,175	5,175	0.6
137	Tombeall silt loam, 0 to 4 percent slopes	175	455	630	0.1
138	Uhlig silt loam, 2 to 8 percent slopes	515	1,265	1,780	0.2
139	Uhlig silt loam, 8 to 20 percent slopes	50	4,460	4,510	0.5
140	Uhlig silt loam, 20 to 35 percent slopes	65	1,490	1,555	0.2
141	Uhlorn silt loam, 8 to 20 percent slopes	6,810	225	7,035	0.8
142	Uhlorn-Nez Perce complex, 2 to 10 percent slopes	31,910	1,460	33,370	3.9
143	Uhlorn-Nez Perce complex, 10 to 20 percent slopes	7,265	1,125	8,390	1.0
144	Uhlorn-Vollmer complex, 8 to 20 percent slopes	13,680	2,115	15,795	1.8
145	Urban land-Wistona complex, nearly level	0	955	955	0.1
146	Uvi silt loam, 35 to 75 percent slopes	480	80	560	0.1
147	Vollmer silt loam, 3 to 10 percent slopes	825	495	1,320	0.2
148	Vollmer silt loam, 10 to 20 percent slopes	940	80	1,020	0.1
149	Watama-Flybow complex, 10 to 35 percent slopes	1,930	20	1,950	0.2
150	Webbridge-Agatha association, 35 to 75 percent slopes	160	6,950	7,110	0.8
151	Westlake-Latahco complex, 0 to 3 percent slopes	2,550	1,070	3,620	0.4
152	Wilkins silt loam, 0 to 5 percent slopes	5,965	3,600	9,565	1.1
153	Wistona very fine sandy loam, 0 to 3 percent slopes	0	1,025	1,025	0.1
154	Zaza-Sweiting complex, 4 to 20 percent slopes	1,990	395	2,385	0.3
W	Water	645	4,090	4,735	0.6
	Total	307,200	547,600	854,800	100.0

Table 5.--Yields Per Acre of Crops and Pasture

(Yields are those that can be expected under a high level of management. Only the soils suited to crops and pasture are listed. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
4 Ahsahka	---	---	---	---	2	5
10 Athena	65	60	---	---	---	---
12 Boles-Joel	45	51	---	---	2.5	4.4
13 Bridgewater-Joseph	---	---	---	---	1.5	3.0
14 Broadax	70	60	1,800	---	---	---
15 Broadax	65	55	1,600	---	---	---
16 Broadax-Hatwai	58	48	1,377	---	---	---
17 Broadax-Hatwai	54	44	1,272	---	---	---
18 Caldwell-Latah	---	---	---	---	3.2	9
19 Calouse-Almota	57	52	1,665	---	---	---
20 Calouse-Endicott-Bryden	58	49	1,586	---	---	---
21 Carlinton	50	50	1,200	---	2.0	3.5
22 Carlinton	45	45	1,200	---	2.0	3.5
23 Carlinton-Talmaks	37	37	---	---	2.3	3.8
24 Cavendish-Taney	58	45	1,418	---	2.1	4.0
25 Chard	55	50	---	---	---	---
26 Chard	45	45	---	---	---	---
27 Chard	35	40	---	---	---	---

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
28--Chard-Chard, moist	35	40	---	---	---	---
29--Chard-Tammany	37	43	---	---	---	---
35--Driscoll	65	50	1,600	900	---	---
36--Driscoll-Larkin	67	51	1,694	1,041	---	---
37--Endicott-Bryden	47	40	1,320	---	---	---
38--Endicott-Bryden	41	39	1,272	---	---	---
39--Endicott-Oliphant	48	48	1,518	---	---	---
45--Jacket	65	50	1,800	1,200	2.5	4.0
46--Jacket	55	45	1,600	1,200	2.0	3.5
47--Jacket-Larkin	43	38	---	---	---	---
48, 49--Joel	45	50	---	---	2.5	4.0
50--Joel-Setters	59	54	1,504	1,000	2.9	3.6
51--Joel-Setters	54	49	1,260	965	2.5	3.0
54--Johnson-Kruse	46	37	---	---	2.0	3.5
55--Johnson-Labuck	46	38	---	---	2.0	3.5
56--Joseph-Tombeall	---	---	---	---	1.9	3.4
60--Keuterville	45	40	---	---	2.0	5.0
63--Klickson	---	---	---	---	2.0	3.5
68--Klickson-Uptmor	---	---	---	---	2.0	3.5
69--Kruse	40	35	---	---	2.0	3.5

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
70--Lapwai-Bridgewater	65	56	---	---	2.9	4.8
71--Larabee	---	---	---	---	2.0	3.5
74--Larkin-Driscoll	60	42	1,559	1,077	---	---
75--Latahco-Thatuna	74	58	1,735	1,170	2.5	4.0
76--Lauby-Southwick	55	45	---	---	---	---
82--Linville-Waha	43	38	---	---	---	---
83--Mallory-Jacket	---	---	---	---	2.0	3.5
85--Meland-Jacket	52	45	1,405	---	2.2	4
86--Meland-Keuterville	45	40	---	---	---	---
87--Mohler-Nez Perce-Uhlorn	78	65	1,716	1,089	---	---
88--Naff	65	55	---	---	---	---
89--Naff-Palouse	76	67	1,742	1,084	---	---
90--Naff-Palouse	75	67	1,744	1,088	---	---
91--Naff-Palouse	61	53	1,352	808	---	---
92--Naff-Palouse-Garfield	55	46	1,142	685	---	---
93--Naff-Thatuna	77	67	1,739	1,117	---	---
94--Naff-Waha	64	53	1,606	906	---	---
95--Naff-Waha	65	55	1,571	800	---	---
96--Naff-Waha	54	49	---	---	---	---
97--Nez Perce	75	65	1,600	900	---	---

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
98--- Nez Perce	60	50	1,400	---	---	---
99--- Nez Perce-Uhlorn	72	62	1,529	987	---	---
100--- Oliphant	60	60	1,600	---	---	---
101--- Oliphant	55	55	1,600	---	---	---
102--- Oliphant, gravelly substratum	60	60	1,600	---	---	---
103--- Oliphant-Alpowa	50	50	---	---	---	---
104--- Oliphant-Hatwai	56	53	1,404	---	---	---
105--- Oliphant-Stember	50	46	---	---	---	---
106--- Palouse-Athena	76	70	1,800	1,134	---	---
107--- Palouse-Athena	75	68	1,800	1,068	---	---
109--- Redmore	55	50	1,600	---	---	---
113--- Setters	55	50	1,200	1,000	4.0	2.5
116--- Slickpoo	45	45	1,400	---	---	---
117--- Slickpoo-Broadax	49	43	1,341	---	---	---
118--- Southwick	70	60	1,700	1,000	---	---
119--- Southwick-Bluesprin	54	48	1,436	736	---	---
120--- Southwick-Driscoll	69	57	1,665	965	---	---
121--- Southwick-Driscoll	63	50	1,518	859	---	---
122--- Southwick-Larkin	62	48	1,600	1,041	---	---

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
123--Sweiting-Joel	42	43	---	---	2.1	3.6
124--Talmaks	35	35	---	---	2.5	4.0
125--Talmaks	35	35	---	---	2.0	3.5
128--Taney	60	50	1,400	1,000	2.5	4.0
129--Taney-Joel	55	48	1,341	1,000	2.0	3.8
130--Taney-Joel	---	---	---	---	2.0	3.2
131--Taney-Setters	58	51	1,318	1,000	3.1	3.4
132--Taney-Setters	54	45	1,195	965	2.5	3.3
133--Thatuna-Naff	73	64	1,667	867	---	---
134--Thatuna-Naff	64	54	1,392	724	---	---
135--Thatuna-Naff	65	55	---	---	---	---
136--Thatuna-Naff-Tilma	72	61	1,694	850	---	---
137--Tombeall	65	55	---	---	2.5	4.0
138--Uhlig	75	65	1,700	---	---	---
139--Uhlig	70	60	1,500	---	---	---
140--Uhlig	65	55	---	---	---	---
141--Uhlorn	75	65	1,600	1,200	---	---
142--Uhlorn-Nez Perce	79	68	1,734	1,101	---	---
143--Uhlorn-Nez Perce	74	63	1,565	1,095	---	---
144--Uhlorn-Vollmer	62	54	1,436	954	---	---

See footnote at end of table.

Table 5.--Yields Per Acre of Crops and Pasture--Continued

Soil name and map symbol	Wheat	Barley	Dry peas	Dry lentils	Grass-legume hay	Pasture
	Bu	Bu	Lbs	Lbs	Tons	AUM*
147, 148---------- Vollmer	45	40	1,200	600	2.0	3.5
151---------- Westlake-Latahco	65	50	---	---	2.5	4.0
152---------- Wilkins	45	45	1,000	800	2.5	4.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

Table 6.--Rangeland Productivity and Characteristic Plant Communities

(Only the soils that support rangeland vegetation suitable for grazing are listed)

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
5:					
Almota	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Geum	10
				Prairie junegrass	5
				Lupine	5
				Northwest cinquefoil	5
				Common snowberry	5
				Indian paintbrush	5
Athena	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Threeflower avens	10
				Prairie junegrass	5
				Silky lupine	5
				Common snowberry	5
				Indian paintbrush	5
				Northwest cinquefoil	5
Hatwai	Steep S Slope Loamy 16-22 Feid-Agsp.	Favorable	1,500	Bluebunch wheatgrass	35
		Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5
				Tapertip hawksbeard	5
6:					
Almota	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Geum	10
				Prairie junegrass	5
				Lupine	5
				Northwest cinquefoil	5
				Common snowberry	5
				Indian paintbrush	5
Linville	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Threeflower avens	10
				Prairie junegrass	5
				Silky lupine	5
				Northwest cinquefoil	5
				Common snowberry	5
				Indian paintbrush	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
7, 8:					
Alpowa	South Slope Stony 12-15 Agsp-Pose.	Favorable	1,000	Bluebunch wheatgrass	60
		Normal	800	Sandberg bluegrass	5
		Unfavorable	600	Common yarrow	5
				Nineleaf biscuitroot	5
				Longleaf phlox	5
				Milkvetch	5
				Broom snakeweed	5
				Rabbitbrush	5
Lickskillet	Shallow South Slope 12-15 Agsp/oppo.	Favorable	800	Bluebunch wheatgrass	50
		Normal	550	Broom snakeweed	5
		Unfavorable	400	Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Bigseed biscuitroot	5
				Bent milkvetch	5
				Wyeth eriogonum	5
				Varileaf phacelia	5
				Plains pricklypear	5
				Rabbitbrush	5
9 Aquolls	Riparian Bottomland Deca5-Carex.	Favorable	5,000	Tufted hairgrass	15
		Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Cinquefoil	5
				Clover	5
				Common yarrow	5
				Threeflower avens	5
				Common snowberry	5
				Willow	5
				Redosier dogwood	5
				Black hawthorn	5
11:					
Bakeoven	Very Shallow Stony 12-15 Arri2/pose.	Favorable	240	Sandberg bluegrass	30
		Normal	180	Stiff sagebrush	30
		Unfavorable	120	Bluebunch wheatgrass	10
				Eriogonum	5
				Phlox	5
				Common yarrow	5
				Arrowleaf balsamroot	5
				Bigseed biscuitroot	5
Watama	Loamy 16-22 Feid-Agsp	Favorable	1,800	Idaho fescue	45
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	1,200	Prairie junegrass	5
				Northwest cinquefoil	5
				Threeflower avens	5
				Common yarrow	5
				Arrowleaf balsamroot	5
				Silky lupine	5
				Indian paintbrush	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
13:					
Bridgewater	Stony Bottomland Syal/agsp	Favorable	1,000	Bluebunch wheatgrass	15
		Normal	900	Wildrye	10
		Unfavorable	800	Sedge	10
				Common snowberry	10
				Woods rose	10
				Slender wheatgrass	5
				Cinquefoil	5
				Common yarrow	5
				Lupine	5
				Redosier dogwood	5
				Black hawthorn	5
Joseph	Stony Riparian Alnus/elymu	Favorable	900	Bluebunch wheatgrass	15
		Normal	800	Slender wheatgrass	10
		Unfavorable	700	Wildrye	10
				Alder	10
				Common snowberry	10
				Woods rose	10
				Sedge	5
				Cinquefoil	5
				American licorice	5
				Black hawthorn	5
				Willow	5
25, 26, 27 Chard	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Penstemon	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
28:					
Chard	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Penstemon	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
Chard, moist	North Slope Loamy 12-15 Feid-Agsp.	Favorable	1,500	Idaho fescue	50
		Normal	1,300	Bluebunch wheatgrass	15
		Unfavorable	1,100	Arrowleaf balsamroot	5
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Prairie junegrass	5
				Rabbitbrush	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
29:					
Chard	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Penstemon	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
Tammany	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Penstemon	5
				Common yarrow	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
34---Crowers	North Slope Loamy 12-15 Feid-Agsp.	Favorable	1,300	Idaho fescue	40
		Normal	1,150	Bluebunch wheatgrass	25
		Unfavorable	1,000	Prairie junegrass	10
				Silky lupine	5
				White hawkweed	5
				Longleaf phlox	5
				Low fleabane	5
40---Entic Haploxerolls	Shallow South Slope 12-15 Agsp/oppo.	Favorable	800	Bluebunch wheatgrass	50
		Normal	550	Tall green rabbitbrush	5
		Unfavorable	400	Bent milkvetch	5
				Wyeth eriogonum	5
				Broom snakeweed	5
				Sandberg bluegrass	5
				Bigseed biscuitroot	5
				Varileaf phacelia	5
				Plains pricklypear	5
41:					
Gwin	Shallow S Slope Stony 16-22 Agsp-Pose.	Favorable	850	Bluebunch wheatgrass	40
		Normal	650	Sandberg bluegrass	15
		Unfavorable	400	Arrowleaf balsamroot	10
				Cous biscuitroot	5
				Wyeth eriogonum	5
				Narrowleaf skullcap	5
				Silky lupine	5
				Bent milkvetch	5
				Penstemon	5
Vollmer	Loamy 16-22 Feid-Agsp	Favorable	1,800	Idaho fescue	45
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	1,200	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Silky lupine	5
				Threeflower avens	5
				Indian paintbrush	5
				Common yarrow	5
				Northwest cinquefoil	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
42---------- Haploxerolls	Loamy 12-15 Agsp-Pose----------	Favorable	1,200	Bluebunch wheatgrass----------	50
		Normal	1,000	Arrowleaf balsamroot----------	10
		Unfavorable	800	Sandberg bluegrass----------	5
				Silky lupine----------	5
				Longleaf phlox----------	5
				Penstemon----------	5
				Common yarrow----------	5
				Nineleaf biscuitroot----------	5
				Smooth sumac----------	5
43---------- Kooverton	S Slope Stony 22+ Agsp-Feid---	Favorable	1,200	Bluebunch wheatgrass----------	40
		Normal	1,000	Idaho fescue----------	10
		Unfavorable	700	Silky lupine----------	10
				Sandberg bluegrass----------	5
				Longleaf phlox----------	5
				Arrowleaf balsamroot----------	5
				Common snowberry----------	5
				Woods rose----------	5
				Mulesear wyethia----------	5
				Wormleaf stonecrop----------	5
44---------- Immig	S Slope Stony 16-22 Agsp/basa3	Favorable	1,200	Bluebunch wheatgrass----------	50
		Normal	1,000	Arrowleaf balsamroot----------	15
		Unfavorable	800	Sandberg bluegrass----------	5
				Milkvetch----------	5
				Nineleaf biscuitroot----------	5
				Silky lupine----------	5
				Penstemon----------	5
46---------- Jacket	N Slope Loamy 22+ Syal/feid---	Favorable	1,500	Bluebunch wheatgrass----------	20
		Normal	1,300	Idaho fescue----------	10
		Unfavorable	1,100	Big bluegrass----------	10
				Nineleaf biscuitroot----------	10
				Silky lupine----------	10
				Penstemon----------	10
				Common snowberry----------	10
				Woods rose----------	10
				Black hawthorn----------	5
53:					
Johnson.					
Dragnot.					
Dragnot, dry------	S Slope Loamy 22+ Syal/agsp---	Favorable	1,300	Bluebunch wheatgrass----------	35
		Normal	1,100	Pine reedgrass----------	10
		Unfavorable	900	Common snowberry----------	10
				Elk sedge----------	5
				Woodland strawberry----------	5
				Arrowleaf balsamroot----------	5
				Threeflower avens----------	5
				Silky lupine----------	5
				Sticky geranium----------	5
				Northwest cinquefoil----------	5
				Woods rose----------	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
56:					
Joseph	Stony Riparian Pobat/elymu	Favorable	900	Bluebunch wheatgrass	15
		Normal	800	Slender wheatgrass	10
		Unfavorable	700	Wildrye	10
				Black cottonwood	10
				Common snowberry	10
				Woods rose	10
				Sedge	5
				Cinquefoil	5
				Redosier dogwood	5
				Black hawthorn	5
				Willow	5
Tombeall	Riparian Bottomland Deca5-Carex.	Favorable	5,000	Tufted hairgrass	15
		Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Cinquefoil	5
				Clover	5
				Common yarrow	5
				Threeflower avens	5
				Common snowberry	5
				Willow	5
				Redosier dogwood	5
				Black hawthorn	5
57:					
Kettenbach	S Slope Stony 16-22 Agsp/basa3	Favorable	1,000	Bluebunch wheatgrass	55
		Normal	800	Arrowleaf balsamroot	15
		Unfavorable	600	Sandberg bluegrass	5
				Silky lupine	5
				Narrowleaf skullcap	5
				Nineleaf biscuitroot	5
				Palouse loco milkvetch	5
Kettenbach, moist	N Slope Stony 15-18 Feid-Agsp	Favorable	1,100	Bluebunch wheatgrass	25
		Normal	900	Idaho fescue	20
		Unfavorable	700	Arrowleaf balsamroot	15
				Fernleaf biscuitroot	10
				Sandberg bluegrass	5
				Silky lupine	5
				Narrowleaf skullcap	5
				Longleaf phlox	5
				Shinyleaf spirea	5
Gwin	Shallow S Slope Stony 16-22 Agsp-Pose.	Favorable	850	Bluebunch wheatgrass	40
		Normal	650	Sandberg bluegrass	15
		Unfavorable	400	Arrowleaf balsamroot	10
				Cous biscuitroot	5
				Wyeth eriogonum	5
				Narrowleaf skullcap	5
				Silky lupine	5
				Bent milkvetch	5
				Penstemon	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
58:					
Kettenbach	S Slope Stony 16-22 Agsp/basa3	Favorable	1,000	Bluebunch wheatgrass	55
		Normal	800	Arrowleaf balsamroot	15
		Unfavorable	600	Sandberg bluegrass	5
				Silky lupine	5
				Narrowleaf skullcap	5
				Nineleaf biscuitroot	5
				Palouse loco milkvetch	5
Keuterville.					
59:					
Kettenbach	S Slope Stony 16-22 Agsp/basa3	Favorable	1,000	Bluebunch wheatgrass	55
		Normal	800	Arrowleaf balsamroot	15
		Unfavorable	600	Sandberg bluegrass	5
				Silky lupine	5
				Narrowleaf skullcap	5
				Nineleaf biscuitroot	5
				Palouse loco milkvetch	5
Rock outcrop.					
66:					
Klickson.					
Hooverton	S Slope Stony 22+ Agsp-Feid	Favorable	1,200	Bluebunch wheatgrass	40
		Normal	1,000	Idaho fescue	10
		Unfavorable	700	Silky lupine	10
				Sandberg bluegrass	5
				Longleaf phlox	5
				Arrowleaf balsamroot	5
				Common snowberry	5
				Woods rose	5
				Mulesear wyethia	5
				Wormleaf stonecrop	5
72:					
Larabee.					
Gwin	Shallow S Slope Stony 16-22 Agsp-Pose.	Favorable	850	Bluebunch wheatgrass	40
		Normal	650	Sandberg bluegrass	15
		Unfavorable	400	Arrowleaf balsamroot	10
				Cous biscuitroot	5
				Wyeth eriogonum	5
				Narrowleaf skullcap	5
				Silky lupine	5
				Bent milkvetch	5
				Penstemon	5
73:					
Larabee.					

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
73:					
Zaza	Shallow Stony 22+ Pose/forbs	Favorable	700	Wormleaf stonecrop	20
		Normal	550	Phlox	20
		Unfavorable	350	Sandberg bluegrass	10
				Penstemon	10
				Wyeth eriogonum	10
				Bluebunch wheatgrass	5
				Biscuitroot	5
				Fleabane	5
				Stiff sagebrush	5
				Rabbitbrush	5
Seddow.					
77:					
Lickskillet	Shallow South Slope 12-15 Agsp/oppo.	Favorable	800	Bluebunch wheatgrass	50
		Normal	550	Broom snakeweed	5
		Unfavorable	400	Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Bigseed biscuitroot	5
				Bent milkvetch	5
				Wyeth eriogonum	5
				Varileaf phacelia	5
				Plains pricklypear	5
				Rabbitbrush	5
Alpowa	South Slope Stony 12-15 Agsp-Pose.	Favorable	1,000	Bluebunch wheatgrass	60
		Normal	800	Sandberg bluegrass	5
		Unfavorable	600	Common yarrow	5
				Nineleaf biscuitroot	5
				Longleaf phlox	5
				Milkvetch	5
				Broom snakeweed	5
				Rabbitbrush	5
Rock outcrop.					
78 Limekiln	Shallow South Slope 12-15 Agsp/oppo.	Favorable	800	Bluebunch wheatgrass	50
		Normal	550	Broom snakeweed	5
		Unfavorable	400	Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Bigseed biscuitroot	5
				Milkvetch	5
				Wyeth eriogonum	5
				Phacelia	5
				Plains pricklypear	5
				Rabbitbrush	5
79:					
Limekiln	Shallow South Slope 12-15 Agsp/oppo.	Favorable	800	Bluebunch wheatgrass	50
		Normal	550	Broom snakeweed	5
		Unfavorable	400	Sandberg bluegrass	5
				Arrowleaf balsamroot	5
				Bigseed biscuitroot	5
				Milkvetch	5
				Wyeth eriogonum	5
				Phacelia	5
				Plains pricklypear	5
				Rabbitbrush	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
79:					
Crowers	North Slope Loamy 12-15 Feid-Agsp.	Favorable	1,300	Idaho fescue	40
		Normal	1,150	Bluebunch wheatgrass	25
		Unfavorable	1,000	Prairie junegrass	10
				Silky lupine	5
				White hawkweed	5
				Longleaf phlox	5
				Low fleabane	5
80 Linville	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Threeflower avens	10
				Prairie junegrass	5
				Silky lupine	5
				Northwest cinquefoil	5
				Common snowberry	5
				Indian paintbrush	5
81:					
Linville	Steep N Slope Loamy 15-18 Feid/forbs.	Favorable	1,500	Idaho fescue	40
		Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Threeflower avens	10
				Prairie junegrass	5
				Silky lupine	5
				Northwest cinquefoil	5
				Common snowberry	5
				Indian paintbrush	5
Kettenbach	S Slope Stony 16-22 Agsp/basa3	Favorable	1,000	Bluebunch wheatgrass	55
		Normal	800	Arrowleaf balsamroot	15
		Unfavorable	600	Sandberg bluegrass	5
				Silky lupine	5
				Narrowleaf skullcap	5
				Nineleaf biscuitroot	5
				Palouse loco milkvetch	5
82:					
Linville	Steep S Slope Loamy 16-22 Feid-Agsp.	Favorable	1,500	Bluebunch wheatgrass	35
		Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Arrowleaf balsamroot	5
				Prairie junegrass	5
				Silky lupine	5
				Northwest cinquefoil	5
				Nineleaf biscuitroot	5
				White stoneseed	5
				Sticky geranium	5
				Tapertip hawksbeard	5
Waha	Steep S Slope Loamy 16-22 Feid-Agsp.	Favorable	1,500	Bluebunch wheatgrass	35
		Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5
				Tapertip hawksbeard	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
83:					
Mallory	Stony Loam 22+ Feid/forbs	Favorable	1,400	Idaho fescue	30
		Normal	1,200	Bluebunch wheatgrass	20
		Unfavorable	1,000	Prairie junegrass	5
				Woods rose	5
				Nineleaf biscuitroot	5
				Arrowleaf balsamroot	5
				Palouse loco milkvetch	5
				Fleabane	5
				Silky lupine	5
				Indian paintbrush	5
				Threeflower avens	5
				Red besseya	5
Jacket	N Slope Loamy 22+ Syal/feid	Favorable	1,500	Bluebunch wheatgrass	20
		Normal	1,300	Idaho fescue	10
		Unfavorable	1,100	Big bluegrass	10
				Nineleaf biscuitroot	10
				Silky lupine	10
				Penstemon	10
				Common snowberry	10
				Woods rose	10
				Black hawthorn	5
84:					
Maloney.					
Zaza	Shallow Stony 22+ Pose/forbs	Favorable	700	Wormleaf stonecrop	20
		Normal	550	Phlox	20
		Unfavorable	350	Sandberg bluegrass	10
				Penstemon	10
				Wyeth eriogonum	10
				Bluebunch wheatgrass	5
				Biscuitroot	5
				Fleabane	5
				Stiff sagebrush	5
				Rabbitbrush	5
85:					
Meland	Loamy 16-22 Feid-Agsp	Favorable	1,800	Idaho fescue	45
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	1,200	Arrowleaf balsamroot	5
				Silky lupine	5
				Threeflower avens	5
				Indian paintbrush	5
				Common yarrow	5
				Northwest cinquefoil	5
				Prairie junegrass	5
Jacket.					
86:					
Meland	Loamy 16-22 Feid-Agsp	Favorable	1,800	Idaho fescue	45
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	1,200	Arrowleaf balsamroot	5
				Silky lupine	5
				Threeflower avens	5
				Indian paintbrush	5
				Common yarrow	5
				Northwest cinquefoil	5
				Prairie junegrass	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
86:					
Keuterville.					
101----------	North Slope Loamy 12-15	Favorable	1,500	Idaho fescue----------	50
Oliphant	Feid-Agsp.	Normal	1,300	Bluebunch wheatgrass----------	15
		Unfavorable	1,100	Arrowleaf balsamroot----------	5
				Silky lupine----------	5
				Longleaf phlox----------	5
				Common yarrow----------	5
				Prairie junegrass----------	5
				Rabbitbrush----------	5
103:					
Oliphant----------	North Slope Loamy 12-15	Favorable	1,500	Idaho fescue----------	50
	Feid-Agsp.	Normal	1,300	Bluebunch wheatgrass----------	15
		Unfavorable	1,100	Arrowleaf balsamroot----------	5
				Silky lupine----------	5
				Longleaf phlox----------	5
				Common yarrow----------	5
				Prairie junegrass----------	5
				Rabbitbrush----------	5
Alpowa----------	South Slope Stony 12-15	Favorable	1,000	Bluebunch wheatgrass----------	60
	Agsp-Pose.	Normal	800	Sandberg bluegrass----------	5
		Unfavorable	600	Common yarrow----------	5
				Nineleaf biscuitroot----------	5
				Longleaf phlox----------	5
105:					
Oliphant----------	Loamy 12-15 Agsp-Pose----------	Favorable	1,200	Bluebunch wheatgrass----------	50
		Normal	1,000	Arrowleaf balsamroot----------	10
		Unfavorable	800	Sandberg bluegrass----------	5
				Silky lupine----------	5
				Longleaf phlox----------	5
				Penstemon----------	5
				Common yarrow----------	5
				Nineleaf biscuitroot----------	5
				Smooth sumac----------	5
Stember----------	South Slope Stony 12-15	Favorable	1,000	Bluebunch wheatgrass----------	60
	Agsp-Pose.	Normal	800	Sandberg bluegrass----------	5
		Unfavorable	600	Common yarrow----------	5
				Nineleaf biscuitroot----------	5
				Longleaf phlox----------	5
				Milkvetch----------	5
				Broom snakeweed----------	5
				Rabbitbrush----------	5
111:					
Rock outcrop.					
Flybow----------	Very Shallow Stony 16-22	Favorable	600	Sandberg bluegrass----------	20
	Pose/forbs.	Normal	450	Cous biscuitroot----------	15
		Unfavorable	300	Onespike danthonia----------	15
				Wild onion----------	10
				Bluebunch wheatgrass----------	5
				Wormleaf stonecrop----------	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
116	Steep S Slope Loamy 16-22	Favorable	1,500	Bluebunch wheatgrass	35
Slickpoo	Feid-Agsp.	Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5
				Tapertip hawksbeard	5
117:					
Slickpoo	Steep S Slope Loamy 16-22	Favorable	1,500	Bluebunch wheatgrass	35
	Feid-Agsp.	Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5
				Tapertip hawksbeard	5
Broadax	Steep S Slope Loamy 16-22	Favorable	1,500	Bluebunch wheatgrass	35
	Feid-Agsp.	Normal	1,300	Idaho fescue	20
		Unfavorable	1,100	Prairie junegrass	5
				Arrowleaf balsamroot	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5
				Tapertip hawksbeard	5
127:					
Tammany	South Slope Loamy 12-15	Favorable	900	Bluebunch wheatgrass	50
	Agsp-Pose.	Normal	800	Sandberg bluegrass	15
		Unfavorable	600	Arrowleaf balsamroot	10
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Nineleaf biscuitroot	5
Chard	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Common yarrow	5
				Penstemon	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
Rock outcrop.					

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
137	Riparian Bottomland	Favorable	5,000	Tufted hairgrass	15
Tombeall	Deca5-Carex.	Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Cinquefoil	5
				Clover	5
				Common yarrow	5
				Threeflower avens	5
				Common snowberry	5
				Willow	5
				Redosier dogwood	5
				Black hawthorn	5
139, 140	Steep N Slope Loamy 15-18	Favorable	1,500	Idaho fescue	40
Uhlig	Feid/forbs.	Normal	1,300	Bluebunch wheatgrass	10
		Unfavorable	1,100	Arrowleaf balsamroot	10
				Threeflower avens	10
				Prairie junegrass	5
				Silky lupine	5
				Common snowberry	5
				Indian paintbrush	5
				Northwest cinquefoil	5
149:					
Watama	Loamy 16-22 Feid-Agsp	Favorable	1,800	Idaho fescue	45
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	1,200	Prairie junegrass	5
				Northwest cinquefoil	5
				Threeflower avens	5
				Common yarrow	5
				Arrowleaf balsamroot	5
				Silky lupine	5
				Indian paintbrush	5
Flybow	Very Shallow Stony 16-22	Favorable	600	Sandberg bluegrass	20
	Pose/forbs.	Normal	450	Cous biscuitroot	15
		Unfavorable	300	Onespike danthonia	15
				Wild onion	10
				Bluebunch wheatgrass	5
				Wormleaf stonecrop	5
151:					
Westlake	Riparian Bottomland	Favorable	5,000	Tufted hairgrass	15
	Deca5-Carex.	Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Cinquefoil	5
				Clover	5
				Common yarrow	5
				Threeflower avens	5
				Common snowberry	5
				Willow	5
				Redosier dogwood	5
				Black hawthorn	5

Table 6.--Rangeland Productivity and Characteristic Plant Communities--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
151:					
Latahco	Riparian Bottomland Deca5-Carex.	Favorable	5,000	Tufted hairgrass	15
		Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Cinquefoil	5
				Clover	5
				Common yarrow	5
				Threeflower avens	5
				Common snowberry	5
				Willow	5
				Redosier dogwood	5
				Black hawthorn	5
152 Wilkins	Riparian Bottomland Deca5-Carex.	Favorable	5,000	Tufted hairgrass	15
		Normal	3,800	Sedge	15
		Unfavorable	2,500	Rush	5
				Bulrush	5
				Slender wheatgrass	5
				Trisetum	5
				Common yarrow	5
				Clover	5
				Common snowberry	5
				Willow	5
				Black hawthorn	5
				Cinquefoil	5
153 Wistona	Loamy 12-15 Agsp-Pose	Favorable	1,200	Bluebunch wheatgrass	50
		Normal	1,000	Arrowleaf balsamroot	10
		Unfavorable	800	Sandberg bluegrass	5
				Silky lupine	5
				Longleaf phlox	5
				Penstemon	5
				Common yarrow	5
				Nineleaf biscuitroot	5
				Smooth sumac	5
154:					
Zaza	0043ay017id	Favorable	700	Wormleaf stonecrop	20
		Normal	550	Phlox	20
		Unfavorable	350	Sandberg bluegrass	10
				Penstemon	10
				Wyeth eriogonum	10
				Bluebunch wheatgrass	5
				Biscuitroot	5
				Fleabane	5
				Stiff sagebrush	5
				Rabbitbrush	5
Sweiting	Loamy Mounds 22+ Feid-Agsp	Favorable	1,600	Idaho fescue	30
		Normal	1,400	Bluebunch wheatgrass	15
		Unfavorable	1,200	Prairie junegrass	10
				Arrowleaf balsamroot	10
				Threeflower avens	5
				Nineleaf biscuitroot	5
				Silky lupine	5
				White stoneseed	5
				Northwest cinquefoil	5
				Sticky geranium	5

Table 7.--Woodland Understory Vegetation

(Only the soils suitable for production of commercial trees are listed)

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
1, 2	Favorable	350	Mallow ninebark	20
Agatha	Normal	300	Creambush oceanspray	10
	Unfavorable	250	Common snowberry	10
			Elk sedge	5
			Columbia brome	5
			Heartleaf arnica	5
			Woodland strawberry	5
			Baldhip rose	5
			White spirea	5
			American trailplant	5
			Piper anemone	5
			Sweetscented bedstraw	5
			Rocky Mountain maple	5
3:				
Agatha	Favorable	350	Mallow ninebark	20
	Normal	300	Creambush oceanspray	10
	Unfavorable	250	Common snowberry	10
			Elk sedge	5
			Columbia brome	5
			Heartleaf arnica	5
			Woodland strawberry	5
			Baldhip rose	5
			White spirea	5
			American trailplant	5
			Piper anemone	5
			Sweetscented bedstraw	5
			Rocky Mountain maple	5
Rock outcrop.				
4	Favorable	1,100	Idaho fescue	30
Ahsahka	Normal	900	Bluebunch wheatgrass	15
	Unfavorable	700	Prairie junegrass	5
			Common snowberry	5
			Pine reedgrass	5
			Elk sedge	5
			Arrowleaf balsamroot	5
			Lupine	5
			Sticky geranium	5
			Threeflower avens	5
			Cinquefoil	5
			Woods rose	5
12:				
Boles	Favorable	900	Common snowberry	25
	Normal	700	Elk sedge	10
	Unfavorable	500	Pine reedgrass	10
			Columbia brome	5
			Idaho fescue	5
			Woodland strawberry	5
			Cinquefoil	5
			Arrowleaf balsamroot	5
			Sticky geranium	5
			White spirea	5
			Baldhip rose	5
			Threeflower avens	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
12:				
Joel	Favorable	600	Elk sedge	25
	Normal	500	Common snowberry	20
	Unfavorable	400	Mallow ninebark	15
			Creambush oceanspray	10
			Baldhip rose	5
			Columbia brome	5
			Pine reedgrass	5
			Woodland strawberry	5
			Saskatoon serviceberry	5
			Low Oregongrape	5
21, 22	Favorable	350	Mallow ninebark	20
Carlinton	Normal	300	Creambush oceanspray	10
	Unfavorable	250	Common snowberry	10
			Elk sedge	5
			Columbia brome	5
			Heartleaf arnica	5
			American trailplant	5
			Piper anemone	5
			Baldhip rose	5
			White spirea	5
			Woodland strawberry	5
23:				
Carlinton	Favorable	450	Common snowberry	15
	Normal	400	Longtube twinflower	15
	Unfavorable	350	Elk sedge	5
			Columbia brome	5
			American trailplant	5
			Piper anemone	5
			Baldhip rose	5
			White spirea	5
			Goldthread	5
			Western rattlesnake plantain	5
			Spreading sweetroot	5
Talmaks	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Pine reedgrass	5
			Elk sedge	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			Baldhip rose	5
			White spirea	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
24:				
Cavendish	Favorable	1,000	Common snowberry	25
	Normal	700	Elk sedge	10
	Unfavorable	400	White spirea	10
			Heartleaf arnica	10
			Pine reedgrass	5
			Blue wildrye	5
			Northwest cinquefoil	5
			Rose	5
			Silky lupine	5
			Saskatoon serviceberry	5
Taney	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
31	Favorable	500	Longtube twinflower	15
Cramont	Normal	450	Common snowberry	10
	Unfavorable	400	Elk sedge	10
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			American trailplant	5
			Baldhip rose	5
			White spirea	5
			Big blueberry	5
			Western meadowrue	5
32:				
Cramont	Favorable	500	Longtube twinflower	15
	Normal	450	Common snowberry	10
	Unfavorable	400	Elk sedge	10
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			American trailplant	5
			Baldhip rose	5
			White spirea	5
			Big blueberry	5
			Western meadowrue	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
32:				
Culdesac	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Pine reedgrass	5
			Elk sedge	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			Baldhip rose	5
			White spirea	5
33:				
Cramont	Favorable	500	Longtube twinflower	15
	Normal	450	Common snowberry	10
	Unfavorable	400	Elk sedge	10
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			American trailplant	5
			Baldhip rose	5
			White spirea	5
			Big blueberry	5
			Western meadowrue	5
Seddow	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5
35	Favorable	1,100	Common snowberry	25
Driscoll	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
36:				
Driscoll	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Larkin	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Rose	5
			Arrowleaf balsamroot	5
47:				
Jacket	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Larkin	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Rose	5
			Arrowleaf balsamroot	5
48, 49	Favorable	600	Elk sedge	25
Joel	Normal	500	Common snowberry	20
	Unfavorable	400	Mallow ninebark	15
			Creambush oceanspray	10
			Baldhip rose	5
			Columbia brome	5
			Pine reedgrass	5
			Woodland strawberry	5
			Saskatoon serviceberry	5
			Low Oregongrape	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
50, 51:				
Joel	Favorable	600	Elk sedge	25
	Normal	500	Common snowberry	20
	Unfavorable	400	Mallow ninebark	15
			Creambush oceanspray	10
			Baldhip rose	5
			Columbia brome	5
			Pine reedgrass	5
			Woodland strawberry	5
			Saskatoon serviceberry	5
			Low Oregongrape	5
Setters	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
52	Favorable	700	Elk sedge	15
Johnson	Normal	600	Mallow ninebark	15
	Unfavorable	500	Common snowberry	10
			Creambush oceanspray	10
			Pine reedgrass	5
			Columbia brome	5
			White spirea	5
			Baldhip rose	5
			Low Oregongrape	5
			Heartleaf arnica	5
			Saskatoon serviceberry	5
			Woodland strawberry	5
53:				
Johnson	Favorable	700	Elk sedge	15
	Normal	600	Mallow ninebark	15
	Unfavorable	500	Common snowberry	10
			Creambush oceanspray	10
			Pine reedgrass	5
			Columbia brome	5
			White spirea	5
			Baldhip rose	5
			Low Oregongrape	5
			Heartleaf arnica	5
			Saskatoon serviceberry	5
			Woodland strawberry	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
53:				
Dragnot	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Dragnot, dry.				
54:				
Johnson	Favorable	700	Common snowberry	20
	Normal	600	Elk sedge	10
	Unfavorable	500	White spirea	10
			Pine reedgrass	5
			Columbia brome	5
			Baldhip rose	5
			Low Oregongrape	5
			Arrowleaf balsamroot	5
			Heartleaf arnica	5
			Saskatoon serviceberry	5
			Woodland strawberry	5
Kruse	Favorable	500	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5
55:				
Johnson	Favorable	700	Common snowberry	20
	Normal	600	Elk sedge	10
	Unfavorable	500	White spirea	10
			Pine reedgrass	5
			Columbia brome	5
			Baldhip rose	5
			Low Oregongrape	5
			Arrowleaf balsamroot	5
			Heartleaf arnica	5
			Saskatoon serviceberry	5
			Woodland strawberry	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
55:				
Labuck	Favorable	500	Elk sedge	25
	Normal	400	White spirea	20
	Unfavorable	300	Common snowberry	15
			Pine reedgrass	10
			Columbia brome	5
			Baldhip rose	5
			Woodland strawberry	5
			Cinquefoil	5
			Lupine	5
			Pussytoes	5
58:				
Kettenbach.				
Keuterville	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Elk sedge	5
			Idaho fescue	5
			White spirea	5
			Rose	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
60, 61	Favorable	1,100	Common snowberry	25
Keuterville	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Elk sedge	5
			Idaho fescue	5
			White spirea	5
			Rose	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
62:				
Keuterville	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Elk sedge	5
			Idaho fescue	5
			White spirea	5
			Rose	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
Rock outcrop.				

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
63, 64----------	Favorable	700	Mallow ninebark----------	15
Klickson	Normal	600	Elk sedge----------	10
	Unfavorable	500	Pine reedgrass----------	10
			Common snowberry----------	10
			Creambush oceanspray----------	10
			Columbia brome----------	5
			Spreading sweetroot----------	5
			Woodland strawberry----------	5
			Heartleaf arnica----------	5
			White spirea----------	5
			Baldhip rose----------	5
			Saskatoon serviceberry----------	5
65:				
Klickson----------	Favorable	700	Mallow ninebark----------	15
	Normal	600	Elk sedge----------	10
	Unfavorable	500	Pine reedgrass----------	10
			Common snowberry----------	10
			Creambush oceanspray----------	10
			Columbia brome----------	5
			Spreading sweetroot----------	5
			Woodland strawberry----------	5
			Heartleaf arnica----------	5
			White spirea----------	5
			Baldhip rose----------	5
			Saskatoon serviceberry----------	5
Agatha----------	Favorable	350	Mallow ninebark----------	20
	Normal	300	Creambush oceanspray----------	10
	Unfavorable	250	Common snowberry----------	10
			Elk sedge----------	5
			Columbia brome----------	5
			Heartleaf arnica----------	5
			Woodland strawberry----------	5
			Baldhip rose----------	5
			White spirea----------	5
			American trailplant----------	5
			Piper anemone----------	5
			Sweetscented bedstraw----------	5
			Rocky Mountain maple----------	5
66:				
Klickson----------	Favorable	700	Mallow ninebark----------	15
	Normal	600	Elk sedge----------	10
	Unfavorable	500	Pine reedgrass----------	10
			Common snowberry----------	10
			Creambush oceanspray----------	10
			Columbia brome----------	5
			Spreading sweetroot----------	5
			Woodland strawberry----------	5
			Heartleaf arnica----------	5
			White spirea----------	5
			Baldhip rose----------	5
			Saskatoon serviceberry----------	5
Hooverton.				

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
67:				
Klickson	Favorable	700	Mallow ninebark	15
	Normal	600	Elk sedge	10
	Unfavorable	500	Pine reedgrass	10
			Common snowberry	10
			Creambush oceanspray	10
			Columbia brome	5
			Spreading sweetroot	5
			Woodland strawberry	5
			Heartleaf arnica	5
			White spirea	5
			Baldhip rose	5
			Saskatoon serviceberry	5
Rock outcrop.				
68:				
Klickson	Favorable	700	Mallow ninebark	15
	Normal	600	Elk sedge	10
	Unfavorable	500	Pine reedgrass	10
			Common snowberry	10
			Creambush oceanspray	10
			Columbia brome	5
			Spreading sweetroot	5
			Woodland strawberry	5
			Heartleaf arnica	5
			White spirea	5
			Baldhip rose	5
			Saskatoon serviceberry	5
Uptmor	Favorable	800	Common snowberry	25
	Normal	600	Elk sedge	20
	Unfavorable	400	Saskatoon serviceberry	10
			Pine reedgrass	5
			Columbia brome	5
			Biscuitroot	5
			Woodland strawberry	5
			Arrowleaf balsamroot	5
			Whorled elkweed	5
			White spirea	5
			Baldhip rose	5
			Low Oregongrape	5
69	Favorable	500	Longtube twinflower	15
Kruse	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
71---------- Larabee	Favorable	800	Elk sedge	20
	Normal	700	Common snowberry	20
	Unfavorable	600	Pine reedgrass	10
			Columbia brome	10
			White spirea	5
			Baldhip rose	5
			Idaho fescue	5
			Woodland strawberry	5
			Cinquefoil	5
			Arrowleaf balsamroot	5
			Sticky geranium	5
			Threeflower avens	5
72:				
Larabee----------	Favorable	800	Elk sedge	20
	Normal	700	Common snowberry	20
	Unfavorable	600	Pine reedgrass	10
			Columbia brome	10
			White spirea	5
			Baldhip rose	5
			Idaho fescue	5
			Woodland strawberry	5
			Cinquefoil	5
			Arrowleaf balsamroot	5
			Sticky geranium	5
			Threeflower avens	5
Gwin.				
73:				
Larabee----------	Favorable	800	Elk sedge	20
	Normal	700	Common snowberry	20
	Unfavorable	600	Pine reedgrass	10
			Columbia brome	10
			White spirea	5
			Baldhip rose	5
			Idaho fescue	5
			Woodland strawberry	5
			Cinquefoil	5
			Arrowleaf balsamroot	5
			Sticky geranium	5
			Threeflower avens	5
Zaza.				
Seddow----------	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
74:				
Larkin	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Rose	5
			Arrowleaf balsamroot	5
Driscoll	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
76:				
Lauby	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Southwick	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
84:				
Maloney	Favorable	1,050	Idaho fescue	30
	Normal	900	Bluebunch wheatgrass	15
	Unfavorable	750	Prairie junegrass	5
			Common snowberry	5
			Pine reedgrass	5
			Elk sedge	5
			Arrowleaf balsamroot	5
			Lupine	5
			Sticky geranium	5
			Threeflower avens	5
			Cinquefoil	5
			Woods rose	5
Zaza.				
85:				
Meland.				
Jacket	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
86:				
Meland.				
Keuterville	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Elk sedge	5
			Idaho fescue	5
			White spirea	5
			Rose	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
112	Favorable	450	Longtube twinflower	15
Seddow	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
113---------- Setters	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
114---------- Shilla	Favorable	450	Big blueberry	15
	Normal	400	Longtube twinflower	15
	Unfavorable	350	Columbia brome	10
			Goldthread	10
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Western meadowrue	5
			Smallflower miterwort	5
			Sidebells shinleaf	5
			Myrtle pachystima	5
			Baldhip rose	5
115:				
Shilla----------	Favorable	450	Big blueberry	15
	Normal	400	Longtube twinflower	15
	Unfavorable	350	Columbia brome	10
			Goldthread	10
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Western meadowrue	5
			Smallflower miterwort	5
			Sidebells shinleaf	5
			Myrtle pachystima	5
			Baldhip rose	5
Seddow----------	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
118---------- Southwick	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
119:				
Southwick----------	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Bluesprin.				
120, 121:				
Southwick----------	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Driscoll----------	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
122:				
Southwick	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			White spirea	5
			Elk sedge	5
			Columbia brome	5
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Woods rose	5
			Low Oregongrape	5
Larkin	Favorable	1,050	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	750	Saskatoon serviceberry	10
			Bluebunch wheatgrass	5
			Idaho fescue	5
			Rose	5
			Arrowleaf balsamroot	5
123:				
Sweiting	Favorable	1,100	Common snowberry	25
	Normal	900	Pine reedgrass	10
	Unfavorable	700	Saskatoon serviceberry	10
			Elk sedge	5
			Idaho fescue	5
			Bluebunch wheatgrass	5
			Columbia brome	5
			Woods rose	5
			Arrowleaf balsamroot	5
			Woodland strawberry	5
			Low Oregongrape	5
			White spirea	5
Joel	Favorable	600	Elk sedge	25
	Normal	500	Common snowberry	20
	Unfavorable	400	Mallow ninebark	15
			Creambush oceanspray	10
			Baldhip rose	5
			Columbia brome	5
			Pine reedgrass	5
			Woodland strawberry	5
			Saskatoon serviceberry	5
			Low Oregongrape	5
124, 125	Favorable	450	Longtube twinflower	15
Talmaks	Normal	400	Common snowberry	15
	Unfavorable	350	Pine reedgrass	5
			Elk sedge	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			Baldhip rose	5
			White spirea	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
126:				
Talmaks	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Pine reedgrass	5
			Elk sedge	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Piper anemone	5
			Common princes pine	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			Baldhip rose	5
			White spirea	5
Seddow	Favorable	450	Longtube twinflower	15
	Normal	400	Common snowberry	15
	Unfavorable	350	Elk sedge	5
			Pine reedgrass	5
			Columbia brome	5
			Goldthread	5
			Western rattlesnake plantain	5
			Common princes pine	5
			Piper anemone	5
			Spreading sweetroot	5
			Saskatoon serviceberry	5
			White spirea	5
			Baldhip rose	5
128	Favorable	600	Common snowberry	15
Taney	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
129, 130:				
Taney	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
129, 130:				
Joel	Favorable	600	Elk sedge	25
	Normal	500	Common snowberry	20
	Unfavorable	400	Mallow ninebark	15
			Creambush oceanspray	10
			Baldhip rose	5
			Columbia brome	5
			Pine reedgrass	5
			Woodland strawberry	5
			Saskatoon serviceberry	5
			Low Oregongrape	5
131, 132:				
Taney	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
Setters	Favorable	600	Common snowberry	15
	Normal	500	Elk sedge	15
	Unfavorable	400	Saskatoon serviceberry	10
			Columbia brome	10
			Baldhip rose	10
			Pine reedgrass	5
			Blue wildrye	5
			Woodland strawberry	5
			Sticky geranium	5
			Heartleaf arnica	5
			Low Oregongrape	5
146	Favorable	400	Mallow ninebark	20
Uvi	Normal	300	Creambush oceanspray	10
	Unfavorable	200	Common snowberry	10
			Elk sedge	5
			Columbia brome	5
			Heartleaf arnica	5
			Woodland strawberry	5
			Baldhip rose	5
			White spirea	5
			American trailplant	5
			Piper anemone	5
			Sweetscented bedstraw	5
			Rocky Mountain maple	5

Table 7.--Woodland Understory Vegetation--Continued

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
150:				
Webbridge	Favorable	300	Longtube twinflower	20
	Normal	250	Big blueberry	10
	Unfavorable	200	Common snowberry	5
			Goldthread	5
			Western rattlesnake plantain	5
			Spreading sweetroot	5
			Queencup beadlily	5
			Sidebells shinleaf	5
			Smallflower miterwort	5
			Saskatoon serviceberry	5
			Baldhip rose	5
Agatha	Favorable	350	Mallow ninebark	20
	Normal	300	Creambush oceanspray	10
	Unfavorable	250	Common snowberry	10
			Elk sedge	5
			Columbia brome	5
			Heartleaf arnica	5
			Woodland strawberry	5
			Baldhip rose	5
			White spirea	5
			American trailplant	5
			Piper anemone	5
			Sweetscented bedstraw	5
			Rocky Mountain maple	5

Table 8.--Woodland Management and Productivity

(Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available)

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
1----------	6A	Moderate	Moderate	Slight	Slight	Severe	Grand fir----------	65	6	Douglas fir.
Agatha							Douglas fir---------	69	4	
							Western larch-------	---	---	
2----------	6R	Severe	Severe	Slight	Slight	Severe	Grand fir----------	65	6	Douglas fir.
Agatha							Douglas fir---------	69	4	
							Western larch-------	---	---	
3:										
Agatha----------	6R	Severe	Severe	Slight	Slight	Severe	Grand fir----------	65	6	Douglas fir.
							Douglas fir---------	69	4	
							Western larch-------	---	---	
Rock outcrop.										
4----------	9A	Moderate	Moderate	Severe	Slight	Moderate	Ponderosa pine------	110	9	Ponderosa pine.
Ahsahka										
12:										
Boles----------	8A	Moderate	Slight	Moderate	Severe	Moderate	Ponderosa pine------	108	9	Ponderosa pine.
Joel----------	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine------	110	8	Ponderosa pine,
							Douglas fir---------	75	6	Douglas fir.
21----------	6D	Moderate	Slight	Slight	Moderate	Severe	Grand fir----------	65	6	Ponderosa pine,
Carlinton							Douglas fir---------	70	4	Douglas fir.
							Ponderosa pine------	100	7	
22----------	6D	Severe	Moderate	Slight	Moderate	Severe	Grand fir----------	65	6	Ponderosa pine,
Carlinton							Douglas fir---------	70	4	Douglas fir.
							Ponderosa pine------	100	7	
23:										
Carlinton---------	7D	Moderate	Slight	Slight	Moderate	Moderate	Grand fir----------	72	7	Ponderosa pine,
							Douglas fir---------	72	5	Douglas fir.
							Ponderosa pine------	107	8	
							Western larch-------	---	---	
							Lodgepole pine------	---	---	

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
23:										
Talmaks	9A	Slight	Slight	Slight	Slight	Moderate	Grand fir	84	9	Ponderosa pine, Douglas fir.
							Douglas fir	78	5	
							Ponderosa pine	102	7	
							Western larch	---	---	
							Lodgepole pine	---	---	
24:										
Cavendish	5A	Slight	Slight	Slight	Slight	Severe	Douglas fir	76	5	Douglas fir, ponderosa pine.
							Ponderosa pine	100	7	
Taney	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine, Douglas fir.
							Douglas fir	75	5	
31	7A	Moderate	Slight	Slight	Slight	Moderate	Grand fir	73	7	Ponderosa pine, Douglas fir, western larch.
Cramont							Douglas fir	71	4	
							Western larch	55	5	
							Ponderosa pine	94	6	
							Lodgepole pine	---	---	
32:										
Cramont	7A	Moderate	Slight	Slight	Slight	Moderate	Grand fir	73	7	Ponderosa pine, Douglas fir, western larch.
							Douglas fir	71	4	
							Western larch	55	5	
							Ponderosa pine	94	6	
							Lodgepole pine	---	---	
Culdesac	6A	Slight	Moderate	Slight	Slight	Moderate	Grand fir	66	6	Douglas fir, western larch.
							Western larch	60	6	
							Douglas fir	64	4	
							Lodgepole pine	---	---	
							Ponderosa pine	---	---	
33:										
Cramont	7A	Moderate	Slight	Slight	Slight	Moderate	Grand fir	73	7	Ponderosa pine, Douglas fir, western larch.
							Douglas fir	71	4	
							Western larch	55	5	
							Ponderosa pine	94	6	
							Lodgepole pine	---	---	

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
33:										
Seddow	6D	Severe	Moderate	Moderate	Moderate	Moderate	Grand fir	64	6	Ponderosa pine,
							Douglas fir	64	4	Douglas fir, western
							Ponderosa pine	85	5	larch.
							Western larch	---	---	
							Lodgepole pine	---	---	
35	9A	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	115	9	Ponderosa pine.
Driscoll										
36:										
Driscoll	9A	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	115	9	Ponderosa pine.
Larkin	6A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	90	6	Ponderosa pine.
47:										
Jacket	9R	Severe	Severe	Slight	Slight	Moderate	Ponderosa pine	113	9	Ponderosa pine.
Larkin	6R	Severe	Severe	Moderate	Slight	Moderate	Ponderosa pine	90	6	Ponderosa pine.
48, 49	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	110	8	Ponderosa pine,
Joel							Douglas fir	75	6	Douglas fir.
50, 51:										
Joel	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	104	8	Ponderosa pine,
							Douglas fir	70	4	Douglas fir.
Setters	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	99	7	Ponderosa pine,
							Douglas fir	74	5	Douglas fir.
52	8R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	106	8	Ponderosa pine,
Johnson							Douglas fir	67	4	Douglas fir.
53:										
Johnson	8R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	106	8	Ponderosa pine,
							Douglas fir	67	4	Douglas fir.
Dragnot	4R	Severe	Severe	Severe	Moderate	Moderate	Ponderosa pine	90	4	Ponderosa pine.
Dragnot, dry.										

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
54:										
Johnson	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	106	8	Ponderosa pine, Douglas fir.
							Douglas fir	67	4	
Kruse	7R	Severe	Severe	Moderate	Slight	Moderate	Grand fir	76	7	Douglas fir, ponderosa pine, western larch.
							Ponderosa pine	108	8	
							Douglas fir	70	4	
							Western larch	---	---	
55:										
Johnson	8A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine	106	8	Ponderosa pine, Douglas fir.
							Douglas fir	67	4	
Labuck	7D	Moderate	Moderate	Severe	Moderate	Moderate	Ponderosa pine	95	7	Ponderosa pine.
							Douglas fir	65	4	
58:										
Kettenbach.										
Keuterville	6R	Severe	Severe	Severe	Slight	Moderate	Ponderosa pine	93	6	Ponderosa pine.
60	6F	Slight	Slight	Moderate	Slight	Moderate	Ponderosa pine	93	6	Ponderosa pine.
Keuterville										
61	6R	Moderate	Severe	Severe	Slight	Moderate	Ponderosa pine	93	6	Ponderosa pine.
Keuterville										
62:										
Keuterville	6R	Severe	Severe	Severe	Slight	Moderate	Ponderosa pine	93	6	Ponderosa pine.
Rock outcrop.										
63	7A	Moderate	Moderate	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine, Douglas fir.
Klickson							Douglas fir	73	5	
64	7R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine, Douglas fir.
Klickson							Douglas fir	73	5	
65:										
Klickson	7R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine, Douglas fir.
							Douglas fir	73	5	

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
65:										
Agatha	6R	Severe	Severe	Slight	Slight	Severe	Grand fir	65	6	Douglas fir.
							Douglas fir	69	4	
							Western larch	---	---	
66:										
Klickson	7R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine,
							Douglas fir	73	5	Douglas fir.
Hooverton.										
67:										
Klickson	7R	Severe	Severe	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine,
							Douglas fir	73	5	Douglas fir.
Rock outcrop.										
68:										
Klickson	7R	Moderate	Severe	Slight	Slight	Severe	Ponderosa pine	98	7	Ponderosa pine,
							Douglas fir	73	5	Douglas fir.
Uptmor	5A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine	85	5	Ponderosa pine,
							Douglas fir	62	3	Douglas fir.
69	7R	Severe	Severe	Moderate	Slight	Moderate	Grand fir	76	7	Douglas fir, ponderosa
Kruse							Ponderosa pine	108	8	pine, western larch.
							Douglas fir	70	4	
							Western larch	---	---	
71	5D	Slight	Slight	Moderate	Moderate	Moderate	Ponderosa pine	82	5	Ponderosa pine,
Larabee							Douglas fir	55	2	Douglas fir.
72:										
Larabee	5R	Severe	Severe	Severe	Slight	Moderate	Ponderosa pine	82	5	Ponderosa pine,
							Douglas fir	55	2	Douglas fir.
Gwin.										
73:										
Larabee	5D	Moderate	Moderate	Moderate	Slight	Moderate	Ponderosa pine	82	5	Ponderosa pine,
							Douglas fir	55	2	Douglas fir.
Zaza.										

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
73:										
Seddow	6D	Severe	Moderate	Moderate	Moderate	Moderate	Grand fir	64	6	Ponderosa pine,
							Douglas fir	64	4	Douglas fir, western
							Ponderosa pine	85	5	larch.
							Western larch	---	---	
							Lodgepole pine	---	---	
74:										
Larkin	6A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine	90	6	Ponderosa pine.
Driscoll	9A	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	115	9	Ponderosa pine.
76:										
Lauby	7A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine	95	7	Ponderosa pine.
Southwick	7D	Moderate	Moderate	Slight	Moderate	Moderate	Ponderosa pine	105	7	Ponderosa pine.
84:										
Maloney	3D	Moderate	Slight	Severe	Severe	Slight	Ponderosa pine	57	3	Ponderosa pine.
							Lodgepole pine	---	---	
Zaza.										
85:										
Meland.										
Jacket	9A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	113	9	Ponderosa pine.
86:										
Meland.										
Keuterville	6F	Moderate	Moderate	Moderate	Slight	Moderate	Ponderosa pine	93	6	Ponderosa pine.
112	6D	Severe	Moderate	Moderate	Moderate	Moderate	Grand fir	64	6	Ponderosa pine,
Seddow							Douglas fir	64	4	Douglas fir, western
							Ponderosa pine	85	5	larch.
							Western larch	---	---	
							Lodgepole pine	---	---	
113	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	99	7	Ponderosa pine,
Setters							Douglas fir	74	5	Douglas fir.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
114---------- Shilla	7A	Slight	Slight	Slight	Slight	Moderate	Grand fir----------	69	7	Douglas fir, western larch.
							Douglas fir----------	69	4	
							Western larch-------	---	---	
							Engelmann spruce----	94	7	
							Lodgepole pine------	---	---	
115:										
Shilla----------	7A	Slight	Slight	Slight	Slight	Moderate	Grand fir----------	69	7	Douglas fir, western larch.
							Douglas fir----------	69	4	
							Western larch-------	---	---	
							Engelmann spruce----	94	7	
							Lodgepole pine------	---	---	
Seddow----------	6D	Moderate	Slight	Moderate	Moderate	Moderate	Grand fir----------	64	6	Ponderosa pine, Douglas fir, western larch.
							Douglas fir----------	64	4	
							Ponderosa pine------	85	5	
							Western larch-------	---	---	
							Lodgepole pine------	---	---	
118---------- Southwick	7D	Slight	Slight	Slight	Moderate	Moderate	Ponderosa pine------	105	7	Ponderosa pine.
119:										
Southwick--------- Bluesprin.	7D	Slight	Moderate	Slight	Moderate	Moderate	Ponderosa pine------	105	7	Ponderosa pine.
120:										
Southwick---------	7D	Slight	Slight	Slight	Moderate	Moderate	Ponderosa pine------	105	7	Ponderosa pine.
Driscoll----------	9A	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine------	115	9	Ponderosa pine.
121:										
Southwick---------	7D	Slight	Moderate	Slight	Moderate	Moderate	Ponderosa pine------	105	7	Ponderosa pine.
Driscoll----------	9A	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine------	115	9	Ponderosa pine.
122:										
Southwick---------	7D	Slight	Moderate	Slight	Moderate	Moderate	Ponderosa pine------	105	7	Ponderosa pine.
Larkin----------	6A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine------	90	6	Ponderosa pine.
123:										
Sweiting----------	5D	Moderate	Slight	Moderate	Moderate	Moderate	Ponderosa pine------	83	5	Ponderosa pine.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
123:										
Joel	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	110	8	Ponderosa pine,
							Douglas fir	75	6	Douglas fir.
124	9A	Slight	Slight	Slight	Slight	Moderate	Grand fir	84	9	Ponderosa pine,
Talmaks							Douglas fir	78	5	Douglas fir.
							Ponderosa pine	102	7	
							Western larch	---	---	
							Lodgepole pine	---	---	
125	9A	Moderate	Slight	Slight	Slight	Moderate	Grand fir	84	9	Ponderosa pine,
Talmaks							Douglas fir	78	5	Douglas fir.
							Ponderosa pine	102	7	
							Western larch	---	---	
							Lodgepole pine	---	---	
126:										
Talmaks	9A	Moderate	Slight	Slight	Slight	Moderate	Grand fir	84	9	Ponderosa pine,
							Douglas fir	78	5	Douglas fir.
							Ponderosa pine	102	7	
							Western larch	---	---	
							Lodgepole pine	---	---	
Seddow	6D	Moderate	Slight	Moderate	Moderate	Moderate	Grand fir	64	6	Ponderosa pine,
							Douglas fir	64	4	Douglas fir, western
							Ponderosa pine	85	5	larch.
							Western larch	---	---	
							Lodgepole pine	---	---	
128	7D	Slight	Slight	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine,
Taney							Douglas fir	75	5	Douglas fir.
129:										
Taney	7D	Severe	Moderate	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine,
							Douglas fir	75	5	Douglas fir.
Joel	8A	Slight	Slight	Slight	Slight	Moderate	Ponderosa pine	104	8	Ponderosa pine,
							Douglas fir	70	4	Douglas fir.
130:										
Taney	7D	Severe	Moderate	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine,
							Douglas fir	75	5	Douglas fir.

Table 8.--Woodland Management and Productivity--Continued

Soil name and map symbol	Ordination symbol	Management concerns					Potential productivity			Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Common trees	Site index	Productivity class	
130:										
Joel	8A	Moderate	Moderate	Slight	Slight	Moderate	Ponderosa pine	104	8	Ponderosa pine,
							Douglas fir	70	4	Douglas fir.
131:										
Taney	7D	Slight	Slight	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine,
							Douglas fir	75	5	Douglas fir.
Setters	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	99	7	Ponderosa pine,
							Douglas fir	74	5	Douglas fir.
132:										
Taney	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	101	7	Ponderosa pine,
							Douglas fir	75	5	Douglas fir.
Setters	7D	Moderate	Slight	Slight	Moderate	Moderate	Ponderosa pine	99	7	Ponderosa pine,
							Douglas fir	74	5	Douglas fir.
146	6R	Severe	Severe	Moderate	Slight	Severe	Grand fir	55	6	Douglas fir, ponderosa
Uvi							Douglas fir	80	7	pine.
							Ponderosa pine	---	---	
150:										
Webbridge	4R	Slight	Severe	Slight	Slight	Moderate	Grand fir	51	4	Douglas fir, Engelmann
							Engelmann spruce	89	6	spruce.
							Douglas fir	55	3	
Agatha	6R	Severe	Severe	Slight	Slight	Severe	Grand fir	65	6	Douglas fir.
							Douglas fir	69	4	
							Western larch	---	---	

Table 9.--Windbreaks and Environmental Plantings

(The symbol < means less than; > means more than. Only the soils suited to windbreaks and environmental plantings are listed. Absence of an entry indicates that trees generally do not grow to the given height on that soil)

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
12:					
Boles	---	Lilac, Austrian pine, Siberian peashrub, Russian olive.	Siberian elm, Douglas fir, black locust, ponderosa pine.	---	---
Joel	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
13:					
Bridgewater	Peking cotoneaster, Nanking cherry.	Siberian peashrub, Rocky Mountain juniper.	Russian olive, Manchurian crabapple.	Siberian crabapple, green ash.	Black locust, ponderosa pine.
Joseph.					
14, 15					
Broadax	Peking cotoneaster, skunkbush sumac.	Siberian peashrub	Russian olive, common chokecherry.	Siberian crabapple	Green ash, Siberian elm, plains cottonwood.
16, 17:					
Broadax	Peking cotoneaster, skunkbush sumac.	Siberian peashrub	Russian olive, common chokecherry.	Siberian crabapple	Green ash, Siberian elm, plains cottonwood.
Hatwai	Tatarian honeysuckle.	Siberian peashrub, lilac, Rocky Mountain juniper, Russian olive.	Green ash, Siberian elm.	Norway spruce, black locust.	---
18:					
Caldwell	Peking cotoneaster, redosier dogwood.	Siberian peashrub, lilac.	Rocky Mountain juniper, Russian olive.	Austrian pine, ponderosa pine.	Green ash, Scotch pine, black locust, Lombardy poplar.
Latah	Redosier dogwood, Peking cotoneaster.	Tatarian honeysuckle, Siberian peashrub, lilac.	Rocky Mountain juniper, Russian olive.	Green ash, Austrian pine, Scotch pine.	Siberian elm, black locust.
19:					
Calouse	Peking cotoneaster, skunkbush sumac.	American plum, Siberian peashrub.	Russian olive, common chokecherry.	---	Green ash, hackberry, golden willow, Siberian elm.
Almota	Peking cotoneaster, skunkbush sumac.	Lilac, Siberian peashrub.	Russian olive, common chokecherry.	Green ash, black locust.	Ponderosa pine, Siberian elm.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
20:					
Calouse	Peking cotoneaster, skunkbush sumac.	American plum, Siberian peashrub.	Russian olive, common chokecherry.	---	Green ash, hackberry, golden willow, Siberian elm.
Endicott	Nanking cherry, Peking cotoneaster.	Siberian peashrub, lilac, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.
Bryden	Peking cotoneaster, skunkbush sumac.	Siberian peashrub, lilac, Tatarian honeysuckle.	---	Norway spruce, green ash.	Black locust, golden willow.
21, 22--Carlinton	Peking cotoneaster, Nanking cherry.	Saskatoon serviceberry, American plum.	Amur maple	---	Ponderosa pine, silver maple.
23:					
Carlinton	Peking cotoneaster, Nanking cherry.	Saskatoon serviceberry, American plum.	Amur maple	---	Ponderosa pine, silver maple.
Talmaks	Nanking cherry, Peking cotoneaster.	Saskatoon serviceberry, Tatarian honeysuckle.	Amur maple, common chokecherry.	Siberian crabapple	Scotch pine, ponderosa pine, white spruce.
24:					
Cavendish	---	Tatarian honeysuckle, Russian olive, lilac, Rocky Mountain juniper.	Golden willow, blue spruce.	Douglas fir, ponderosa pine, black locust.	---
Taney	Peking cotoneaster, Nanking cherry.	American plum	Common chokecherry, Amur maple.	Black locust	Ponderosa pine, white spruce.
25, 26, 27--Chard	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
28:					
Chard	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
Chard, moist	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
29:					
Chard	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
Tammany.					

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
30:					
Chard	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
Urban land.					
35--Driscoll	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine.	Siberian elm, Lombardy poplar, golden willow.	---
36:					
Driscoll	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine.	Siberian elm, Lombardy poplar, golden willow.	---
Larkin	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine.	Golden willow, Siberian elm.	---
37, 38:					
Endicott	Nanking cherry, Peking cotoneaster.	Siberian peashrub, lilac, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.
Bryden	Peking cotoneaster, skunkbush sumac.	Siberian peashrub, lilac, Tatarian honeysuckle.	---	Norway spruce, green ash.	Black locust, golden willow.
39:					
Endicott	Nanking cherry, Peking cotoneaster.	Siberian peashrub, lilac, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.
Oliphant	Nanking cherry, Peking cotoneaster.	Siberian peashrub, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.
41:					
Gwin.					
Vollmer	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Ponderosa pine, Austrian pine, black locust, Siberian elm.	---	---
42--Haploxerolls	---	Siberian peashrub, lilac, Tatarian honeysuckle.	---	Norway spruce, green ash.	Black locust.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
45, 46---------- Jacket	---	Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper.	Siberian elm, black locust, ponderosa pine.	---	---
47: Jacket.					
Larkin----------	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine.	Golden willow, Siberian elm.	---
48, 49---------- Joel	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
50, 51: Joel----------	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
Setters----------	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
54: Johnson----------	Peking cotoneaster, Nanking cherry.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Manchurian crabapple.	---	Ponderosa pine, black locust.
Kruse----------	---	Lilac, Tatarian honeysuckle, Siberian peashrub.	Russian olive, Norway spruce, blue spruce, Austrian pine.	Ponderosa pine, Douglas fir.	---
55: Johnson----------	Peking cotoneaster, Nanking cherry.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Manchurian crabapple.	---	Ponderosa pine, black locust.
Labuck----------	Peking cotoneaster, Nanking cherry.	Lilac, Saskatoon serviceberry.	Manchurian crabapple, common chokecherry.	Siberian crabapple, black locust.	Ponderosa pine, blue spruce.
56: Joseph.					

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
56:					
Tombeall	Nanking cherry	Siberian peashrub, Saskatoon serviceberry.	Common chokecherry, Russian olive.	---	Golden willow, plains cottonwood.
58:					
Kettenbach.					
Keuterville	---	Siberian peashrub, lilac, Rocky Mountain juniper.	Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
60, 61					
Keuterville	---	Siberian peashrub, lilac, Rocky Mountain juniper.	Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
62:					
Keuterville	---	Siberian peashrub, lilac, Rocky Mountain juniper.	Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
Rock outcrop.					
69					
Kruse	---	Lilac, Tatarian honeysuckle, Siberian peashrub.	Russian olive, Norway spruce, blue spruce, Austrian pine.	Ponderosa pine, Douglas fir.	---
70:					
Lapwai	Nanking cherry, skunkbush sumac.	Siberian peashrub, American plum.	Manchurian crabapple, common chokecherry.	---	Black locust, hackberry, Siberian elm, ponderosa pine.
Bridgewater	Peking cotoneaster, Nanking cherry.	Siberian peashrub, Rocky Mountain juniper.	Russian olive, Manchurian crabapple.	Siberian crabapple, green ash.	Black locust, ponderosa pine.
74:					
Larkin	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine.	Golden willow, Siberian elm.	---
Driscoll	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine.	Siberian elm, Lombardy poplar, golden willow.	---

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
75:					
Latahco	---	Siberian peashrub, Tatarian honeysuckle, lilac, Russian olive, golden willow.	---	Siberian elm, ponderosa pine.	Cottonwood.
Thatuna	---	Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry.	Norway spruce, Austrian pine, ponderosa pine.	Black locust	---
76:					
Lauby.					
Southwick	---	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac.	Russian olive, golden willow.	Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine.	Cottonwood.
83:					
Mallory.					
Jacket	---	Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper.	Siberian elm, black locust, ponderosa pine.	---	---
85:					
Meland	---	Siberian peashrub, Russian olive, Austrian pine.	Siberian elm, black locust, ponderosa pine.	---	---
Jacket	---	Siberian peashrub, Russian olive, Austrian pine, Amur honeysuckle, lilac, Rocky Mountain juniper.	Siberian elm, black locust, ponderosa pine.	---	---
86:					
Meland	---	Siberian peashrub, Russian olive, Austrian pine.	Siberian elm, black locust, ponderosa pine.	---	---
Keuterville	---	Siberian peashrub, lilac, Rocky Mountain juniper.	Russian olive, Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
87:					
Mohler	Peking cotoneaster, Nanking cherry.	Siberian peashrub, Saskatoon serviceberry.	Manchurian crabapple, common chokecherry.	Siberian crabapple	Black locust, green ash, ponderosa pine.
Nez Perce	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
Uhlorn	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
89, 90:					
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Palouse	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
91:					
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Palouse	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
92:					
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Palouse	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Garfield	---	Green ash, Nanking cherry, blue spruce, lilac, Siberian peashrub.	Russian olive, Rocky Mountain juniper.	Norway spruce, Austrian pine, black locust, ponderosa pine, Douglas fir.	---
93:					
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
93: Thatuna	---	Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry.	Norway spruce, Austrian pine, ponderosa pine.	Black locust	---
94, 95: Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Waha	Peking cotoneaster, Nanking cherry.	American plum, Saskatoon serviceberry.	Manchurian crabapple, common chokecherry.	---	Black locust, ponderosa pine.
97, 98 Nez Perce	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
99: Nez Perce	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
Uhlorn	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
100, 101 Oliphant	Nanking cherry, Peking cotoneaster.	Siberian peashrub, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.
102 Oliphant, gravelly substratum	Peking cotoneaster, skunkbush sumac.	Rocky Mountain juniper, Tatarian honeysuckle.	Russian olive, Austrian pine, green ash.	Black locust, hackberry, ponderosa pine.	---
103: Oliphant.					
Alpowa	Skunkbush sumac, Siberian peashrub, lilac, Tatarian honeysuckle.	Rocky Mountain juniper, Russian olive, green ash, Siberian elm.	Austrian pine, ponderosa pine, Scotch pine, black locust.	---	---
104: Oliphant	Nanking cherry, Peking cotoneaster.	Siberian peashrub, Tatarian honeysuckle.	Common chokecherry	Norway spruce, green ash.	Black locust, golden willow.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
104:					
Hatwai	Tatarian honeysuckle.	Siberian peashrub, lilac, Rocky Mountain juniper, Russian olive.	Green ash, Siberian elm.	Norway spruce, black locust.	---
105:					
Oliphant	Peking cotoneaster, skunkbush sumac.	Rocky Mountain juniper, Tatarian honeysuckle.	Russian olive, Austrian pine, green ash.	Black locust, hackberry, ponderosa pine.	---
Stember	Peking cotoneaster, skunkbush sumac.	Lilac, Siberian peashrub, eastern redcedar.	Hackberry, Russian olive, green ash.	Siberian elm, plains cottonwood.	---
106, 107:					
Palouse	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Athena	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
109--Redmore	Skunkbush sumac, Peking cotoneaster.	Siberian peashrub, Rocky Mountain juniper.	Russian olive, green ash.	Hackberry, black locust.	Siberian elm, honeylocust.
113--Setters	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
116--Slickpoo	Skunkbush sumac---	Peking cotoneaster, lilac, Tatarian honeysuckle, Siberian peashrub.	Rocky Mountain juniper, common chokecherry.	---	Russian olive, black locust, Siberian elm.
117:					
Slickpoo	Skunkbush sumac---	Peking cotoneaster, lilac, Tatarian honeysuckle, Siberian peashrub.	Rocky Mountain juniper, common chokecherry.	---	Russian olive, black locust, Siberian elm.
Broadax	Peking cotoneaster, skunkbush sumac.	Siberian peashrub	Russian olive, common chokecherry.	Siberian crabapple	Green ash, Siberian elm, plains cottonwood.
118--Southwick	---	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac.	Russian olive, golden willow.	Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine.	Cottonwood.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
119:					
Southwick	---	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac.	Russian olive, golden willow.	Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine.	Cottonwood.
Bluesprin	Peking cotoneaster, Nanking cherry.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Manchurian crabapple.	---	Ponderosa pine, black locust.
120, 121:					
Southwick	---	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac.	Russian olive, golden willow.	Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine.	Cottonwood.
Driscoll	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Rocky Mountain juniper, Douglas fir, green ash, blue spruce, ponderosa pine.	Siberian elm, Lombardy poplar, golden willow.	---
122:					
Southwick	---	Siberian peashrub, Rocky Mountain juniper, Tatarian honeysuckle, lilac.	Russian olive, golden willow.	Black locust, Scotch pine, Douglas fir, ponderosa pine, Austrian pine.	Cottonwood.
Larkin	Peking cotoneaster	Siberian peashrub, lilac, honeysuckle.	Green ash, Douglas fir, blue spruce, Rocky Mountain juniper, Norway spruce, ponderosa pine.	Golden willow, Siberian elm.	---
123:					
Sweiting	---	Lilac, Austrian pine, Siberian peashrub, Russian olive.	Siberian elm, Douglas fir, black locust, ponderosa pine.	---	---
Joel	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
124, 125 Talmaks	Nanking cherry, Peking cotoneaster.	Saskatoon serviceberry, Tatarian honeysuckle.	Amur maple, common chokecherry.	Siberian crabapple	Scotch pine, ponderosa pine, white spruce.
126:					
Talmaks	Nanking cherry, Peking cotoneaster.	Saskatoon serviceberry, Tatarian honeysuckle.	Amur maple, common chokecherry.	Siberian crabapple	Scotch pine, ponderosa pine, white spruce.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
126: Seddow.					
127: Tammany.					
Chard	Peking cotoneaster	Tatarian honeysuckle, Rocky Mountain juniper.	Russian olive, green ash, Siberian elm.	Ponderosa pine, black locust, blue spruce.	Austrian pine.
Rock outcrop.					
128 Taney	Peking cotoneaster, Nanking cherry.	American plum	Common chokecherry, Amur maple.	Black locust	Ponderosa pine, white spruce.
129: Taney	Peking cotoneaster, Nanking cherry.	American plum	Common chokecherry, Amur maple.	Black locust	Ponderosa pine, white spruce.
Joel	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
130: Taney.					
Joel	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
131, 132: Taney	Peking cotoneaster, Nanking cherry.	American plum	Common chokecherry, Amur maple.	Black locust	Ponderosa pine, white spruce.
Setters	Peking cotoneaster	Siberian peashrub, honeysuckle, lilac.	Douglas fir, blue spruce, green ash, Rocky Mountain juniper, ponderosa pine.	Golden willow, Siberian elm, Lombardy poplar.	---
133, 134: Thatuna	---	Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry.	Norway spruce, Austrian pine, ponderosa pine.	Black locust	---

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
133, 134:					
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
135:					
Thatuna	---	Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry.	Norway spruce, Austrian pine, ponderosa pine.	Black locust	---
Naff.					
136:					
Thatuna	---	Green ash, Douglas fir, Siberian peashrub, Russian olive, blue spruce, Rocky Mountain juniper, lilac, Nanking cherry.	Norway spruce, Austrian pine, ponderosa pine.	Black locust	---
Naff	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Tilma	---	Green ash, Douglas fir, Rocky Mountain juniper, Siberian peashrub, Russian olive, lilac, Nanking cherry.	Austrian pine, ponderosa pine, Norway spruce, blue spruce.	Black locust	---
137 Tombeall	Nanking cherry	Siberian peashrub, Saskatoon serviceberry.	Common chokecherry, Russian olive.	---	Golden willow, plains cottonwood.
138, 139, 140 Uhlig	Peking cotoneaster, redosier dogwood.	Siberian peashrub, lilac.	Rocky Mountain juniper, Russian olive.	Austrian pine, ponderosa pine, green ash, Scotch pine.	Siberian elm, black locust.
141 Uhlorn	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.

Table 9.--Windbreaks and Environmental Plantings--Continued

Soil name and map symbol	Trees having predicted 20-year average height, in feet, of--				
	<8	8-15	16-25	26-35	>35
142, 143:					
Uhlorn	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Nez Perce	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Siberian elm, black locust, ponderosa pine, Austrian pine.	---	---
144:					
Uhlorn	Nanking cherry, Peking cotoneaster.	Tatarian honeysuckle, Saskatoon serviceberry.	Common chokecherry, Russian olive.	Siberian crabapple, ponderosa pine.	Green ash, black locust.
Vollmer	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Ponderosa pine, Austrian pine, black locust, Siberian elm.	---	---
145:					
Urban land.					
Wistona	Peking cotoneaster, skunkbush sumac.	Siberian peashrub, Rocky Mountain juniper.	Russian olive, Manchurian crabapple.	---	Black locust, hackberry, Siberian elm.
147, 148 Vollmer	---	Siberian peashrub, Russian olive, lilac, Amur honeysuckle.	Ponderosa pine, Austrian pine, black locust, Siberian elm.	---	---
151:					
Westlake	---	Siberian peashrub, lilac, Russian olive, golden willow.	---	Siberian elm, ponderosa pine.	Cottonwood.
Latahco	---	Siberian peashrub, Tatarian honeysuckle, lilac, Russian olive, golden willow.	---	Siberian elm, ponderosa pine.	Cottonwood.
153 Wistona	Peking cotoneaster, skunkbush sumac.	Siberian peashrub, Rocky Mountain juniper.	Russian olive, Manchurian crabapple.	---	Black locust, hackberry, Siberian elm.

Table 10.--Recreational Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
1, 2 Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
3: Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
4 Ahsahka	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
5: Almota	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Athena	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Hatwai	Severe: slope, excess sodium.	Severe: slope, excess sodium.	Severe: slope, excess sodium.	Severe: slope, erodes easily.	Severe: excess sodium, slope.
6: Almota	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
7, 8: Alpowa	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
Lickskillet	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
9 Aquolls	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.	Severe: ponding.
10 Athena	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
11: Bakeoven	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Moderate: slope, dusty.	Severe: depth to rock.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
11:					
Watama	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
12:					
Boles	Severe: wetness.	Moderate: wetness, dusty.	Severe: wetness.	Moderate: wetness, dusty.	Moderate: wetness.
Joel	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
13:					
Bridgewater	Severe: flooding, small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones, large stones, droughty.
Joseph	Severe: flooding, large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, small stones, flooding.	Severe: large stones, small stones.	Severe: small stones, large stones, droughty.
14	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
Broadax					
15	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Broadax					
16:					
Broadax	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
Hatwai	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Severe: erodes easily.	Severe: excess sodium.
17:					
Broadax	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Hatwai	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Severe: erodes easily.	Severe: excess sodium.
18:					
Caldwell	Severe: flooding.	Moderate: dusty.	Moderate: flooding.	Moderate: dusty.	Moderate: flooding.
Latah	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
19:					
Calouse	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Severe: erodes easily.	Severe: excess sodium.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
19:					
Almota	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.
20:					
Calouse	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Severe: erodes easily.	Severe: excess sodium.
Endicott	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Severe: erodes easily.	Moderate: cemented pan.
Bryden	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Severe: erodes easily.	Moderate: cemented pan.
21--Carlinton	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: wetness.
22--Carlinton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
23:					
Carlinton	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
Talmaks	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
24:					
Cavendish	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Taney	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
25--Chard	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
26--Chard	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
27--Chard	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
28:					
Chard	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
28:					
Chard, moist	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
29:					
Chard	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Tammany	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
30:					
Chard	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
Urban land.					
31	Moderate:	Moderate:	Severe:	Severe:	Slight.
Cramont	dusty.	dusty.	slope.	erodes easily.	
32:					
Cramont	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
Culdesac	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
33:					
Cramont	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
34	Severe:	Severe:	Severe:	Severe:	Severe:
Crowers	slope.	slope.	slope.	slope.	slope.
35	Moderate:	Moderate:	Severe:	Moderate:	Moderate:
Driscoll	wetness, dusty.	wetness, dusty.	slope.	wetness, dusty.	wetness.
36:					
Driscoll	Moderate: wetness, dusty.	Moderate: wetness, dusty.	Moderate: slope, wetness, dusty.	Moderate: wetness, dusty.	Moderate: wetness.
Larkin	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.	Slight.
37:					
Endicott	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Severe: erodes easily.	Moderate: cemented pan.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
37:					
Bryden	Moderate: dusty.	Moderate: dusty.	Moderate: slope, cemented pan, dusty.	Severe: erodes easily.	Moderate: cemented pan.
38:					
Endicott	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, cemented pan.
Bryden	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, cemented pan.
39:					
Endicott	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, cemented pan.
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
40 Entic Haploxerolls	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, erodes easily.	Severe: slope, depth to rock.
41:					
Gwin	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: slope, dusty.	Severe: small stones, slope, depth to rock.
Vollmer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
42 Haploxerolls	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope, depth to rock.
43 Hooverton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
44 Immig	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: droughty, slope.
45 Jacket	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.	Slight.
46 Jacket	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
47:					
Jacket	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Larkin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
48--Joel	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
49--Joel	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
50:					
Joel	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.	Slight.
Setters	Severe: wetness.	Moderate: wetness, dusty.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
51:					
Joel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Setters	Severe: wetness.	Moderate: slope, wetness, dusty.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness, slope.
52--Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
53:					
Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dragnot	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Dragnot, dry	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
54:					
Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Kruse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
55:					
Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Labuck	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
56:					
Joseph	Severe: flooding, large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: large stones, small stones.	Severe: small stones, large stones, droughty.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
56:					
Tombeall	Severe: flooding, wetness.	Moderate: wetness, dusty.	Severe: wetness.	Moderate: wetness, dusty.	Moderate: wetness, flooding.
57:					
Kettenbach	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Kettenbach, moist	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Gwin	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope, depth to rock.
58:					
Kettenbach	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Keuterville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Moderate: small stones, droughty.
59:					
Kettenbach	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
60--Keuterville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.	Moderate: small stones, droughty.
61--Keuterville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Moderate: small stones, droughty.
62:					
Keuterville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Moderate: small stones, droughty.
Rock outcrop.					
63, 64--Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
65:					
Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
66:					
Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Hooverton	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
67:					
Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Rock outcrop.					
68:					
Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Uptmor	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
69--- Kruse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
70:					
Lapwai	Severe: flooding.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.	Slight.
Bridgewater	Severe: flooding, small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones, large stones, droughty.
71--- Larabee	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: droughty, slope, depth to rock.
72:					
Larabee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Gwin	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope, depth to rock.
73:					
Larabee	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Zaza	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope, depth to rock.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
73:					
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
74:					
Larkin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Driscoll	Moderate: slope, wetness, dusty.	Moderate: slope, wetness, dusty.	Severe: slope.	Moderate: wetness, dusty.	Moderate: wetness, slope.
75:					
Latahco	Severe: flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.
Thatuna	Moderate: wetness, dusty.	Moderate: wetness, dusty.	Moderate: slope, wetness, dusty.	Moderate: dusty.	Slight.
76:					
Lauby	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Southwick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope, dusty.	Severe: slope.
77:					
Lickskillet	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.	Severe: slope, depth to rock.
Alpowa	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
Rock outcrop.					
78					
Limekiln	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope, depth to rock.
79:					
Limekiln	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: small stones, slope, depth to rock.
Crowers	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
80--Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
81:					
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Kettenbach	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
82:					
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Waha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
83:					
Mallory	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
Jacket	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
84:					
Maloney	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones, slope, depth to rock.
Zaza	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, slope, small stones.	Slight	Severe: depth to rock.
85:					
Meland	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.
Jacket	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
86:					
Meland	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Keuterville	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Moderate: small stones, droughty.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
87:					
Mohler	Slight	Slight	Severe: slope.	Slight	Slight.
Nez Perce	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Uhlorn	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
88	Severe:	Severe:	Severe:	Severe:	Severe:
Naff	slope.	slope.	slope.	slope, erodes easily.	slope.
89:					
Naff	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
Palouse	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
90:					
Naff	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Palouse	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
91:					
Naff	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Palouse	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
92:					
Naff	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Palouse	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
Garfield	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
93:					
Naff	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
Thatuna	Moderate: wetness, dusty.	Moderate: wetness, dusty.	Moderate: slope, wetness, dusty.	Moderate: dusty.	Slight.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
94:					
Naff	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
Waha	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Moderate: depth to rock.
95:					
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Waha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
96:					
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Waha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
97 Nez Perce	Severe: wetness.	Moderate: wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness.
98 Nez Perce	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
99:					
Nez Perce	Severe: wetness.	Moderate: slope, wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness, slope.
Uhlorn	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
100 Oliphant	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
101 Oliphant	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
102 Oliphant, gravelly substratum	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
103:					
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Alpowa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Moderate: droughty.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
104:					
Oliphant	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
Hatwai	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Severe: erodes easily.	Severe: excess sodium.
105:					
Oliphant	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Stember	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: large stones, droughty, slope.
106:					
Palouse	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.	Slight.
Athena	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
107:					
Palouse	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
Athena	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
108. Pits, gravel					
109 Redmore	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.	Severe: excess sodium.
110: Riverwash.					
Aquents	Severe: flooding, large stones, wetness.	Severe: wetness, large stones.	Severe: large stones, small stones, wetness.	Severe: large stones, wetness.	Severe: large stones, wetness, droughty.
111: Rock outcrop.					
Flybow	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, slope.
112 Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
113--Setters	Severe: wetness.	Moderate: wetness, dusty.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
114--Shilla	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.	Moderate: small stones.
115:					
Shilla	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.	Severe: slope.
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
116--Slickpoo	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
117:					
Slickpoo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Broadax	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
118--Southwick	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness, dusty.	Moderate: wetness.
119:					
Southwick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope, dusty.	Severe: slope.
Bluesprin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
120:					
Southwick	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Moderate: wetness, dusty.	Moderate: wetness.
Driscoll	Moderate: wetness, dusty.	Moderate: wetness, dusty.	Severe: slope.	Moderate: wetness, dusty.	Moderate: wetness.
121:					
Southwick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope, dusty.	Severe: slope.
Driscoll	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope, dusty.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
122:					
Southwick	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: wetness, slope, dusty.	Severe: slope.
Larkin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
123:					
Sweiting	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.
Joel	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.	Moderate: slope.
124 Talmaks	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.
125 Talmaks	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
126:					
Talmaks	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Seddow	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
127:					
Tammany	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chard	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
Rock outcrop.					
128 Taney	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Slight.
129:					
Taney	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Joel	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
130:					
Taney	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
130:					
Joel	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
131:					
Taney	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Slight.
Setters	Severe: wetness.	Moderate: wetness, dusty.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
132:					
Taney	Moderate: slope, wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Setters	Severe: wetness.	Moderate: slope, wetness, dusty.	Severe: slope, wetness.	Severe: erodes easily.	Moderate: wetness, slope.
133, 134:					
Thatuna	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
135:					
Thatuna	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
136:					
Thatuna	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Tilma	Moderate: slope, wetness, dusty.	Moderate: slope, wetness, dusty.	Severe: slope.	Moderate: wetness, dusty.	Moderate: wetness, slope.
137 Tombeall	Severe: flooding, wetness.	Moderate: wetness, dusty.	Severe: wetness.	Moderate: wetness, dusty.	Moderate: wetness.
138 Uhlig	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.	Slight.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
139 Uhlig	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
140 Uhlig	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
141 Uhlorn	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
142: Uhlorn	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Slight.
Nez Perce	Severe: wetness.	Moderate: wetness.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness.
143: Uhlorn	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Nez Perce	Severe: slope, wetness.	Severe: slope.	Severe: slope, wetness.	Moderate: wetness, slope.	Severe: slope.
144: Uhlorn	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
Vollmer	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.
145: Urban land.					
Wistona	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight.
146 Uvi	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, erodes easily.	Severe: slope.
147 Vollmer	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.	Moderate: depth to rock.
148 Vollmer	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
149: Watama	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.	Severe: slope.
Flybow	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Moderate: slope, dusty.	Severe: small stones, slope.

Table 10.--Recreational Development--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
150:					
Webbridge	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
151:					
Westlake	Severe: flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.
Latahco	Severe: flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.	Moderate: wetness, dusty.	Moderate: wetness, flooding.
152 Wilkins	Severe: flooding, wetness.	Moderate: wetness, percs slowly, dusty.	Severe: wetness.	Moderate: wetness, dusty.	Moderate: wetness, flooding.
153 Wistona	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Slight.
154:					
Zaza	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, slope, small stones.	Slight	Severe: depth to rock.
Sweiting	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.	Moderate: slope, depth to rock.

Table 11.--Building Site Development

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
1, 2--- Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
3:						
Agatha---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
4--- Ahsahka	Severe: slope.	Severe: slope.	Severe: slope, shrink-swell.	Severe: slope.	Severe: slope.	Severe: slope.
5:						
Almota---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Athena---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Hatwai---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: excess sodium, slope.
6:						
Almota---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Linville---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
7, 8:						
Alpowa---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Lickskillet---	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
9--- Aquolls	Severe: ponding.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: flooding, ponding, shrink-swell.	Severe: shrink-swell, low strength, ponding.	Severe: ponding.
10--- Athena	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
11:						
Bakeoven	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Watama	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
12:						
Boles	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
Joel	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
13:						
Bridgewater	Severe: cutbanks cave, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: large stones.	Severe: small stones, large stones, droughty.
Joseph	Severe: cutbanks cave, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: small stones, large stones, droughty.
14 Broadax	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
15 Broadax	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
16:						
Broadax	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Hatwai	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Severe: excess sodium.
17:						
Broadax	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Hatwai	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Severe: excess sodium.
18:						
Caldwell	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: flooding.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
18:						
Latah	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness.
19:						
Calouse	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Severe: excess sodium.
Almota	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: frost action.	Moderate: slope, depth to rock.
20:						
Calouse	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Severe: excess sodium.
Endicott	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: low strength, frost action.	Moderate: cemented pan.
Bryden	Severe: cemented pan.	Moderate: shrink-swell, cemented pan.	Severe: cemented pan.	Moderate: shrink-swell, slope, cemented pan.	Severe: low strength, frost action.	Moderate: cemented pan.
21—Carlinton	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength, frost action.	Moderate: wetness.
22—Carlinton	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
23:						
Carlinton	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: low strength, frost action.	Moderate: wetness.
Talmaks	Slight	Slight	Slight	Moderate: slope.	Severe: low strength, frost action.	Slight.
24:						
Cavendish	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
Taney	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
25—Chard	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
26, 27---------- Chard	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
28:						
Chard----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chard, moist-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
29:						
Chard----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tammany----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
30:						
Chard----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
Urban land.						
31---------- Cramont	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
32:						
Cramont----------	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Culdesac----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
33:						
Cramont----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Seddow----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
34---------- Crowers	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
35---------- Driscoll	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
36:						
Driscoll	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
Larkin	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
37:						
Endicott	Severe: cemented pan.	Moderate: cemented pan.	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: low strength, frost action.	Moderate: cemented pan.
Bryden	Severe: cemented pan.	Moderate: shrink-swell, cemented pan.	Severe: cemented pan.	Moderate: shrink-swell, slope, cemented pan.	Severe: low strength, frost action.	Moderate: cemented pan.
38:						
Endicott	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, cemented pan.
Bryden	Severe: cemented pan.	Moderate: shrink-swell, slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, cemented pan.
39:						
Endicott	Severe: cemented pan.	Moderate: slope, cemented pan.	Severe: cemented pan.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, cemented pan.
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
40- Entic Haploxerolls	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
41:						
Gwin	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Vollmer	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
42- Haploxerolls	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, depth to rock.
43- Hooverton	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
44--- Immig	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: droughty, slope.
45--- Jacket	Moderate: too clayey.	Moderate: shrink-swell.	Severe: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
46--- Jacket	Severe: slope.	Severe: slope.	Severe: slope, shrink-swell.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
47:						
Jacket---	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Larkin---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
48--- Joel	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
49--- Joel	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
50:						
Joel---	Slight---	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Setters---	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
51:						
Joel---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Setters---	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness, slope.
52--- Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
53:						
Johnson---	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
53:						
Dragnot	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Dragnot, dry	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
54:						
Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kruse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
55:						
Johnson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Labuck	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
56:						
Joseph	Severe: cutbanks cave, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: small stones, large stones, droughty.
Tombeall	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Moderate: wetness, flooding.
57:						
Kettenbach	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kettenbach, moist	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Gwin	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
58:						
Kettenbach	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Keuterville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, droughty.
59:						
Kettenbach	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
59: Rock outcrop.						
60, 61--Keuterville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, droughty.
62: Keuterville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, droughty.
Rock outcrop.						
63, 64--Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
65: Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
66: Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Hooverton	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
67: Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Rock outcrop.						
68: Klickson	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Uptmor	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
69--Kruse	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
70: Lapwai	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: frost action.	Slight.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
70:						
Bridgewater	Severe: cutbanks cave, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: flooding, large stones.	Severe: large stones.	Severe: small stones, large stones, droughty.
71	Severe:	Moderate:	Severe:	Severe:	Moderate:	Moderate:
Larabee	depth to rock.	shrink-swell, slope, depth to rock.	depth to rock.	slope.	depth to rock, shrink-swell, slope.	droughty, slope, depth to rock.
72:						
Larabee	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Gwin	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
73:						
Larabee	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Zaza	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
74:						
Larkin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Driscoll	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
75:						
Latahco	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: wetness, flooding.
Thatuna	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: low strength, frost action.	Slight.
76:						
Lauby	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
76:						
Southwick	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
77:						
Lickskillet	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Alpowa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Rock outcrop.						
78						
Limekiln	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope, frost action.	Severe: small stones, slope, depth to rock.
79:						
Limekiln	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope, frost action.	Severe: small stones, slope, depth to rock.
Crowers	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
80						
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
81:						
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kettenbach	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
82:						
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Waha	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
83:						
Mallory	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: slope.
Jacket	Severe: slope.	Severe: slope.	Severe: slope, shrink-swell.	Severe: slope.	Severe: low strength, slope.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
84:						
Maloney	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, slope, depth to rock.
Zaza	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
85:						
Meland	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Jacket	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
86:						
Meland	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Keuterville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: small stones, droughty.
87:						
Mohler	Slight	Slight	Moderate: shrink-swell.	Moderate: slope.	Severe: low strength, frost action.	Slight.
Nez Perce	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.
Uhlorn	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
88 Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
89:						
Naff	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Palouse	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
90:						
Naff	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
90:						
Palouse	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
91:						
Naff	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Palouse	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
92:						
Naff	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Palouse	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Garfield	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
93:						
Naff	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Thatuna	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
94:						
Naff	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Waha	Severe: depth to rock.	Moderate: shrink-swell, depth to rock.	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: low strength, frost action.	Moderate: depth to rock.
95, 96:						
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Waha	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
97, 98--Nez Perce	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
99:						
Nez Perce	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.
Uhlorn	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
100 Oliphant	Slight	Slight	Slight	Slight	Moderate: low strength, frost action.	Slight.
101 Oliphant	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
102 Oliphant, gravelly substratum	Slight	Slight	Slight	Moderate: slope.	Severe: frost action.	Slight.
103:						
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Alpowa	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: droughty.
104:						
Oliphant	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Slight.
Katwai	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Severe: excess sodium.
105:						
Oliphant	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: frost action.	Moderate: slope.
Stember	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Severe: frost action.	Moderate: large stones, droughty, slope.
106:						
Palouse	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Athena	Slight	Slight	Slight	Moderate: slope.	Severe: low strength, frost action.	Slight.
107:						
Palouse	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
107:						
Athena	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
108.						
Pits, gravel						
109						
Redmore	Moderate: cemented pan.	Moderate: shrink-swell.	Moderate: cemented pan, shrink-swell.	Moderate: shrink-swell.	Severe: low strength, frost action.	Severe: excess sodium.
110:						
Riverwash.						
Aquents	Severe: cutbanks cave, large stones, wetness.	Severe: flooding, wetness, large stones.	Severe: flooding, wetness, large stones.	Severe: flooding, wetness, large stones.	Severe: wetness, flooding, large stones.	Severe: large stones, wetness, droughty.
111:						
Rock outcrop.						
Flybow	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope.
112						
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
113						
Setters	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
114						
Shilla	Moderate: depth to rock, large stones.	Moderate: shrink-swell, large stones.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope, large stones.	Severe: frost action.	Moderate: small stones.
115:						
Shilla	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Seddow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
116						
Slickpoo	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
117:						
Slickpoo	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
117:						
Broadax	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
118 Southwick	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
119:						
Southwick	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Bluesprin	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
120:						
Southwick	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Moderate: wetness.
Driscoll	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
121:						
Southwick	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Driscoll	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
122:						
Southwick	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Larkin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
123:						
Sweiting	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Joel	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
124---------- Talmaks	Slight---------	Slight---------	Slight---------	Moderate: slope.	Severe: low strength, frost action.	Slight.
125---------- Talmaks	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
126:						
Talmaks----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Seddow----------	Moderate: depth to rock, large stones, slope.	Moderate: shrink-swell, slope, large stones.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
127:						
Tammany----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Chard----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
128---------- Taney	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
129, 130:						
Taney----------	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Joel----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
131:						
Taney----------	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Setters----------	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness.
132:						
Taney----------	Severe: wetness.	Moderate: wetness, shrink-swell, slope.	Severe: wetness.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
132:						
Setters	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, frost action.	Moderate: wetness, slope.
133, 134, 135:						
Thatuna	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
136:						
Thatuna	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Naff	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Tilma	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: wetness, slope.
137--Tombeall	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Moderate: wetness.
138--Uhlig	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
139--Uhlig	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
140--Uhlig	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
141--Uhlorn	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
142:						
Uhlorn	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength, frost action.	Slight.
Nez Perce	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell, low strength.	Moderate: wetness.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
143:						
Uhlorn	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
Nez Perce	Severe: wetness, slope.	Severe: wetness, shrink-swell, slope.	Severe: wetness, slope, shrink-swell.	Severe: wetness, shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
144:						
Uhlorn	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope.
Vollmer	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength, frost action.	Moderate: slope, depth to rock.
145:						
Urban land.						
Wistona	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
146						
Uvi	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
147						
Vollmer	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: low strength, frost action.	Moderate: depth to rock.
148						
Vollmer	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: low strength, slope, frost action.	Severe: slope.
149:						
Watama	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Flybow	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope.
150:						
Webbridge	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Agatha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
151:						
Westlake	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: low strength, flooding, frost action.	Moderate: wetness, flooding.

Table 11.--Building Site Development--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
151:						
Latahco	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Moderate: wetness, flooding.
152 Wilkins	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Moderate: wetness, flooding.
153 Wistona	Slight	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding, frost action.	Slight.
154:						
Zaza	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Sweiting	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.

Table 12.--Sanitary Facilities

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
1, 2---------- Agatha	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
3: Agatha----------	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Rock outcrop.					
4---------- Ahsahka	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
5: Almota----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Athena----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Hatwai----------	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, excess sodium.	Severe: slope.	Poor: slope, excess sodium.
6: Almota----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Linville----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
7, 8: Alpowa----------	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Lickskillet--------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
9---------- Aquolls	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, depth to rock, ponding.	Severe: flooding, ponding.	Poor: hard to pack, ponding.
10---------- Athena	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
11:					
Bakeoven	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Watama	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
12:					
Boles	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Joel	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
13:					
Bridgewater	Severe: poor filter, large stones.	Severe: seepage, large stones.	Severe: seepage, too sandy, large stones.	Severe: seepage.	Poor: seepage, too sandy, small stones.
Joseph	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
14 Broadax	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
15 Broadax	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
16:					
Broadax	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Hatwai	Severe: percs slowly.	Moderate: seepage, slope.	Severe: excess sodium.	Slight	Poor: excess sodium.
17:					
Broadax	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Hatwai	Severe: percs slowly.	Severe: slope.	Severe: excess sodium.	Moderate: slope.	Poor: excess sodium.
18:					
Caldwell	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
18:					
Latah	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
19:					
Calouse	Moderate: percs slowly, slope.	Severe: slope.	Severe: excess sodium.	Moderate: slope.	Poor: excess sodium.
Almota	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
20:					
Calouse	Moderate: percs slowly.	Moderate: seepage, slope.	Severe: excess sodium.	Slight	Poor: excess sodium.
Endicott	Severe: cemented pan.	Severe: cemented pan.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
Bryden	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
21--Carlinton	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
22--Carlinton	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
23:					
Carlinton	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.
Talmaks	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
24:					
Cavendish	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Fair: depth to rock, too clayey, slope.
Taney	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope, too clayey.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
25--Chard	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
26, 27--Chard	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
28:					
Chard	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Chard, moist	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
29:					
Chard	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Tammany	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
30:					
Chard	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: thin layer.
Urban land.					
31--Cramont	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
32:					
Cramont	Severe: percs slowly.	Moderate: seepage, slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
Culdesac	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
33:					
Cramont	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Seddow	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
34--Crowers	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
35--Driscoll	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
36:					
Driscoll	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
Larkin	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
37:					
Endicott	Severe: cemented pan.	Severe: cemented pan.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
Bryden	Severe: cemented pan, percs slowly.	Severe: cemented pan.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
38:					
Endicott	Severe: cemented pan.	Severe: cemented pan, slope.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
Bryden	Severe: cemented pan, percs slowly.	Severe: cemented pan, slope.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
39:					
Endicott	Severe: cemented pan.	Severe: cemented pan, slope.	Severe: depth to rock, cemented pan.	Severe: cemented pan.	Poor: cemented pan.
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
40--Entic Haploxerolls	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
41:					
Gwin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Vollmer	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
42--Haploxerolls	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
43--Hooverton	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
44--Immig	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, small stones.
45--Jacket	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: too clayey, hard to pack.
46--Jacket	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
47:					
Jacket	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
Larkin	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
48--Joel	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
49--Joel	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
50:					
Joel	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Setters	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
51:					
Joel	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Setters	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
52--Johnson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
53:					
Johnson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
53:					
Dragnot	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
Dragnot, dry	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, small stones, slope.
54:					
Johnson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Kruse	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
55:					
Johnson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Labuck	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
56:					
Joseph	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
Tombeall	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, small stones, wetness.
57:					
Kettenbach	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Kettenbach, moist	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Gwin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
58:					
Kettenbach	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
58:					
Keuterville	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
59:					
Kettenbach	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop.					
60, 61					
Keuterville	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
62:					
Keuterville	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
63, 64					
Klickson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
65:					
Klickson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Agatha	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
66:					
Klickson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Hooverton	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
67:					
Klickson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
68:					
Klickson	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
68:					
Uptmor	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, small stones.
69--- Kruse	Severe: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
70:					
Lapwai	Moderate: flooding, percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: small stones.
Bridgewater	Severe: poor filter, large stones.	Severe: seepage, large stones.	Severe: seepage, too sandy, large stones.	Severe: seepage.	Poor: seepage, too sandy, small stones.
71--- Larabee	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
72:					
Larabee	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Gwin	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
73:					
Larabee	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Zaza	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Seddow	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
74:					
Larkin	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Driscoll	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness, slope.	Poor: thin layer.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
75:					
Latahco	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Fair: too clayey, wetness.
Thatuna	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
76:					
Lauby	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Southwick	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
77:					
Lickskillet	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Alpowa	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Rock outcrop.					
78---------- Limekiln	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
79:					
Limekiln	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Crowers	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
80---------- Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
81:					
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Kettenbach	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
82:					
Linville	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Waha	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
83:					
Mallory	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, small stones.
Jacket	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, too clayey.	Severe: slope.	Poor: too clayey, hard to pack, slope.
84:					
Maloney	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Zaza	Severe: depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
85:					
Meland	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Jacket	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
86:					
Meland	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Keuterville	Severe: percs slowly, slope.	Severe: slope.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
87:					
Mohler	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Nez Perce	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
Uhlorn	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
88--Naff	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
89:					
Naff	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Palouse	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
90:					
Naff	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Palouse	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
91:					
Naff	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Palouse	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
92:					
Naff	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Palouse	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Garfield	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey, hard to pack.
93:					
Naff	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Thatuna	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
94:					
Naff	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight	Fair: too clayey.
Waha	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
95, 96:					
Naff	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Waha	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
97, 98 Nez Perce	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
99:					
Nez Perce	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
Uhlorn	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
100 Oliphant	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
101 Oliphant	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
102 Oliphant, gravelly substratum	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Poor: small stones.
103:					
Oliphant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Alpowa	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope, large stones.	Severe: seepage, slope.	Poor: large stones, slope.
104:					
Oliphant	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Hatwai	Severe: percs slowly.	Moderate: seepage, slope.	Severe: excess sodium.	Slight	Poor: excess sodium.
105:					
Oliphant	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
Stember	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
106:					
Palouse	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Athena	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
107:					
Palouse	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Athena	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
108.					
Pits, gravel					
109	Severe:	Moderate:	Severe:	Moderate:	Poor:
Redmore	percs slowly.	seepage, cemented pan, slope.	cemented pan, excess sodium.	cemented pan.	hard to pack, excess sodium.
110:					
Riverwash.					
Aquents	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Poor: seepage, too sandy, small stones.
111:					
Rock outcrop.					
Flybow	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
112	Severe:	Severe:	Severe:	Severe:	Poor:
Seddow	percs slowly, slope.	slope.	depth to rock, slope.	slope.	small stones, slope.
113	Severe:	Moderate:	Severe:	Severe:	Poor:
Setters	wetness, percs slowly.	seepage, slope.	wetness, too clayey.	wetness.	too clayey, hard to pack, wetness.
114	Severe:	Severe:	Severe:	Moderate:	Poor:
Shilla	percs slowly.	slope.	depth to rock, large stones.	depth to rock.	small stones.
115:					
Shilla	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
115:					
Seddow	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
116					
Slickpoo	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: large stones.
117:					
Slickpoo	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: large stones, slope.
Broadax	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
118					
Southwick	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: wetness.
119:					
Southwick	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
Bluesprin	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
120:					
Southwick	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Moderate: wetness.	Fair: wetness.
Driscoll	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness.	Moderate: wetness.	Poor: thin layer.
121:					
Southwick	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
Driscoll	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Poor: slope, thin layer.
122:					
Southwick	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: wetness, slope.	Severe: slope.	Poor: slope.
Larkin	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
123:					
Sweiting	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Joel	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
124	Severe:	Moderate:	Moderate:	Slight	Fair:
Talmaks	percs slowly.	seepage, slope.	too clayey.		too clayey.
125	Severe:	Severe:	Moderate:	Moderate:	Fair:
Talmaks	percs slowly.	slope.	slope, too clayey.	slope.	too clayey, slope.
126:					
Talmaks	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Seddow	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: small stones.
127:					
Tammany	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Chard	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
Rock outcrop.					
128	Severe:	Severe:	Moderate:	Moderate:	Fair:
Taney	wetness, percs slowly.	wetness.	wetness, too clayey.	wetness.	too clayey, wetness.
129, 130:					
Taney	Severe: wetness, percs slowly, slope.	Severe: slope, wetness.	Severe: slope.	Severe: slope.	Poor: slope.
Joel	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
131:					
Taney	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Setters	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
132:					
Taney	Severe: wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness, slope, too clayey.	Moderate: wetness, slope.	Fair: too clayey, slope, wetness.
Setters	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
133, 134, 135:					
Thatuna	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Naff	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
136:					
Thatuna	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Naff	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Tilma	Severe: wetness, percs slowly.	Severe: slope.	Severe: wetness, too clayey.	Moderate: wetness, slope.	Poor: too clayey, hard to pack.
137 Tombeall	Severe: wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Severe: seepage, wetness.	Poor: seepage, small stones, wetness.
138 Uhlig	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Good.
139 Uhlig	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope.
140 Uhlig	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
141 Uhlorn	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
142:					
Uhlorn	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
142:					
Nez Perce	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack.
143:					
Uhlorn	Severe: percs slowly, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Nez Perce	Severe: wetness, percs slowly, slope.	Severe: slope.	Severe: wetness, slope, too clayey.	Severe: wetness, slope.	Poor: too clayey, hard to pack, slope.
144:					
Uhlorn	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
Vollmer	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
145:					
Urban land.					
Wistona	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
146					
Uvi	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: slope.	Poor: slope.
147					
Vollmer	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
148					
Vollmer	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
149:					
Watama	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Flybow	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
150:					
Webbridge	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: small stones, slope.

Table 12.--Sanitary Facilities--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
150:					
Agatha	Severe: percs slowly, slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
151:					
Westlake	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
Latahco	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding.	Fair: too clayey, wetness.
152 Wilkins	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
153 Wistona	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
154:					
Zaza	Severe: depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
Sweiting	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.

Table 13.--Construction Materials

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
1, 2 Agatha	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
3: Agatha	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
Rock outcrop.				
4 Ahsahka	Poor: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
5: Almota	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Athena	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Hatwai	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium, slope.
6: Almota	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Linville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
7, 8: Alpowa	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Lickskillet	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
9 Aquolls	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, wetness.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
10--Athena	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
11:				
Bakeoven	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Watama	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
12:				
Boles	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Joel	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
13:				
Bridgewater	Poor: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: small stones, area reclaim.
Joseph	Poor: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
14--Broadax	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
15--Broadax	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
16:				
Broadax	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Hatwai	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
17:				
Broadax	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Hatwai	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
18:				
Caldwell	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Latah	Poor: shrink-swell, low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
19:				
Calouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Almota	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
20:				
Calouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Endicott	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones.
Bryden	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, thin layer.
21 Carlinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
22 Carlinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
23:				
Carlinton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Talmaks	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
24:				
Cavendish	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Taney	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
25 Chard	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
26 Chard	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
27 Chard	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
28:				
Chard	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Chard, moist	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
29:				
Chard	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
29:				
Tammany	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
30:				
Chard	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Urban land.				
31	Poor:	Improbable:	Improbable:	Poor:
Cramont	low strength.	excess fines.	excess fines.	too clayey.
32:				
Cramont	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Culdesac	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
33:				
Cramont	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Seddow	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
34	Poor:	Improbable:	Improbable:	Poor:
Crowers	slope.	excess fines.	excess fines.	small stones, area reclaim, slope.
35	Fair:	Improbable:	Improbable:	Fair:
Driscoll	low strength, thin layer, wetness.	excess fines.	excess fines.	thin layer.
36:				
Driscoll	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Larkin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
37:				
Endicott	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones.
Bryden	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, thin layer.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
38:				
Endicott	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, slope.
Bryden	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, thin layer.
39:				
Endicott	Poor: cemented pan, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: cemented pan, small stones, slope.
Oliphant	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
40 Entic Haploxerolls	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
41:				
Gwin	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Vollmer	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
42 Haploxerolls	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
43 Hooverton	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
44 Immig	Poor: depth to rock, shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
45 Jacket	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
46 Jacket	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
47:				
Jacket	Poor: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
47:				
Larkin	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
48	Poor:	Improbable:	Improbable:	Good.
Joel	low strength.	excess fines.	excess fines.	
49	Poor:	Improbable:	Improbable:	Fair:
Joel	low strength.	excess fines.	excess fines.	slope.
50:				
Joel	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Setters	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
51:				
Joel	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Setters	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
52	Poor:	Improbable:	Improbable:	Poor:
Johnson	slope.	excess fines.	excess fines.	small stones, slope.
53:				
Johnson	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Dragnot	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Dragnot, dry	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
54:				
Johnson	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Kruse	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
55:				
Johnson	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Labuck	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
56:				
Joseph	Poor: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: too sandy, small stones, area reclaim.
Tombeall	Fair: wetness.	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
57:				
Kettenbach	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
Kettenbach, moist	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
Gwin	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
58:				
Kettenbach	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
Keuterville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
59:				
Kettenbach	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
Rock outcrop.				
60	Fair: large stones, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
61	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
62:				
Keuterville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Rock outcrop.				

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
63, 64---------- Klickson	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
65:				
Klickson----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Agatha----------	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.
66:				
Klickson----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Hooverton----------	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
67:				
Klickson----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Rock outcrop.				
68:				
Klickson----------	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Uptmor----------	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
69---------- Kruse	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
70:				
Lapwai----------	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Bridgewater----------	Poor: large stones.	Improbable: large stones.	Improbable: large stones.	Poor: small stones, area reclaim.
71---------- Larabee	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
72:				
Larabee	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Gwin	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
73:				
Larabee	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Zaza	Poor: depth to rock.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones, slope.
Seddow	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
74:				
Larkin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Driscoll	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
75:				
Latahco	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Thatuna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
76:				
Lauby	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
77:				
Lickskillet	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Alpowa	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Rock outcrop.				

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
78--Limekiln	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
79:				
Limekiln	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Crowers	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
80--Linville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
81:				
Linville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Kettenbach	Poor: depth to rock, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
82:				
Linville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Waha	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
83:				
Mallory	Poor: depth to rock, shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, slope.
Jacket	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
84:				
Maloney	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Zaza	Poor: depth to rock.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
85:				
Meland	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, slope.
Jacket	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
86:				
Meland	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Keuterville	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
87:				
Mohler	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Nez Perce	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
88	Poor:	Improbable:	Improbable:	Poor:
Naff	low strength, slope.	excess fines.	excess fines.	slope.
89:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
90:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
91:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
92:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
92:				
Garfield	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
93:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Thatuna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
94:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Waha	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey.
95:				
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Waha	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
96:				
Naff	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Waha	Poor: depth to rock, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
97, 98 Nez Perce	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
99:				
Nez Perce	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
100 Oliphant	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
101 Oliphant	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
102 Oliphant, gravelly substratum	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
103:				
Oliphant	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
103:				
Alpowa	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: area reclaim, small stones, slope.
104:				
Oliphant	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Hatwai	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
105:				
Oliphant	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
Stember	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
106:				
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Athena	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
107:				
Palouse	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Athena	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
108.				
Pits, gravel				
109	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, excess sodium.
110:				
Riverwash.				
Aquents	Poor: large stones, wetness.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
111:				
Rock outcrop.				
Flybow	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
112	Poor: thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
113--Setters	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
114--Shilla	Fair: depth to rock, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
115:				
Shilla	Fair: depth to rock, shrink-swell, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Seddow	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
116--Slickpoo	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
117:				
Slickpoo	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Broadax	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
118--Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
119:				
Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Bluesprin	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
120:				
Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Driscoll	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
121:				
Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Driscoll	Fair: low strength, thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
122:				
Southwick	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Larkin	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
123:				
Sweiting	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Joel	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
124 Talmaks	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
125 Talmaks	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
126:				
Talmaks	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Seddow	Poor: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
127:				
Tammany	Poor: slope.	Probable	Probable	Poor: small stones, area reclaim, slope.
Chard	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rock outcrop.				
128 Taney	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
129:				
Taney	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Joel	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
130:				
Taney	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Joel	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
131:				
Taney	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Setters	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
132:				
Taney	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Setters	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
133, 134:				
Thatuna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
135:				
Thatuna	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Naff	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
136:				
Thatuna	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Naff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Tilma	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, slope.
137 Tombeall	Fair: wetness.	Improbable: small stones.	Probable	Poor: small stones, area reclaim.
138 Uhlig	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
139 Uhlig	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
140 Uhlig	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
141 Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
142:				
Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Nez Perce	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer.
143:				
Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Nez Perce	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
144:				
Uhlorn	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Vollmer	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
145:				
Urban land.				
Wistona	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
146	Poor:	Improbable:	Improbable:	Poor:
Uvi	slope.	excess fines.	excess fines.	slope.
147	Poor:	Improbable:	Improbable:	Poor:
Vollmer	depth to rock, low strength.	excess fines.	excess fines.	small stones.
148	Poor:	Improbable:	Improbable:	Poor:
Vollmer	depth to rock, low strength.	excess fines.	excess fines.	small stones, slope.
149:				
Watama	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Flybow	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
150:				
Webbridge	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Agatha	Poor: slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: large stones, area reclaim, slope.

Table 13.--Construction Materials--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
151:				
Westlake	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Latahco	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
152	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
153	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Wistona				
154:				
Zaza	Poor: depth to rock.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, small stones.
Sweiting	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

Table 14.--Water Management

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
1, 2---------- Agatha	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
3: Agatha---------- Rock outcrop.	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
4---------- Ahsahka	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
5: Almota---------- Athena---------- Hatwai---------- 6: Almota---------- Linville--------- 7, 8: Alpowa---------- Lickskillet------	Severe: slope. Severe: slope. Severe: slope. Severe: slope. Severe: slope. Severe: slope. Severe: depth to rock, slope.	Severe: piping. Moderate: piping. Severe: piping, excess sodium. Severe: piping. Moderate: piping. Severe: piping, large stones. Severe: thin layer.	Severe: no water. Severe: no water. Severe: no water. Severe: no water. Severe: no water. Severe: no water. Severe: no water.	Deep to water Deep to water Deep to water Deep to water Deep to water Deep to water Deep to water	Slope, depth to rock, erodes easily. Slope, erodes easily. Slope, percs slowly, erodes easily. Slope, depth to rock, erodes easily. Slope, erodes easily. Slope, large stones, droughty. Slope, droughty, depth to rock.	Slope, depth to rock, erodes easily. Slope, erodes easily. Slope, erodes easily. Slope, depth to rock, erodes easily. Slope, erodes easily. Slope, large stones. Slope, large stones, depth to rock.	Slope, erodes easily, depth to rock. Slope, erodes easily. Slope, excess sodium, erodes easily. Slope, erodes easily, depth to rock. Slope, erodes easily. Large stones, slope, droughty. Large stones, slope, droughty.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
9---------- Aquolls	Moderate: depth to rock.	Severe: thin layer, ponding.	Severe: slow refill.	Ponding, flooding, frost action.	Ponding, flooding.	Erodes easily, ponding.	Wetness, erodes easily.
10---------- Athena	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
11:							
Bakeoven----------	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Watama----------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
12:							
Boles----------	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Joel----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
13:							
Bridgewater------	Severe: seepage.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty.	Large stones, too sandy, soil blowing.	Large stones, droughty.
Joseph----------	Severe: seepage.	Severe: seepage, large stones.	Severe: large stones, cutbanks cave.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.	Large stones, droughty, rooting depth.
14---------- Broadax	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
15---------- Broadax	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
16:							
Broadax----------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
16:							
Hatwai	Moderate: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily	Excess sodium, erodes easily.
17:							
Broadax	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Hatwai	Severe: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily.	Slope, excess sodium, erodes easily.
18:							
Caldwell	Moderate: seepage.	Moderate: piping, wetness.	Severe: slow refill.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Latah	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly, flooding, frost action.	Wetness, percs slowly, flooding.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
19:							
Calouse	Severe: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, erodes easily, excess sodium.	Slope, erodes easily.	Slope, excess sodium, erodes easily.
Almota	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
20:							
Calouse	Moderate: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, erodes easily, excess sodium.	Erodes easily	Excess sodium, erodes easily.
Endicott	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Cemented pan, erodes easily.	Erodes easily, cemented pan.
Bryden	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Cemented pan, erodes easily.	Erodes easily, cemented pan.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
21---------- Carlinton	Moderate: seepage, slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
22---------- Carlinton	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
23:							
Carlinton--------	Moderate: seepage, slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
Talmaks----------	Moderate: slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
24:							
Cavendish--------	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Taney----------	Severe: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
25---------- Chard	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
26, 27---------- Chard	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
28:							
Chard----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Chard, moist-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
29:							
Chard----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
29:							
Tammany	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
30:							
Chard	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Urban land.							
31	Moderate:	Moderate:	Severe:	Deep to water	Slope,	Erodes easily,	Erodes easily,
Cramont	slope.	hard to pack.	no water.		percs slowly, erodes easily.	percs slowly.	percs slowly.
32:							
Cramont	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
Culdesac	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
33:							
Cramont	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Seddow	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
34	Severe:	Severe:	Severe:	Deep to water	Slope	Slope	Slope.
Crowers	slope.	piping.	no water.				
35	Moderate:	Severe:	Severe:	Percs slowly,	Slope,	Erodes easily,	Erodes easily,
Driscoll	seepage, slope.	piping.	no water.	frost action, slope.	wetness, percs slowly.	wetness.	percs slowly.
36:							
Driscoll	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
36:							
Larkin	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
37:							
Endicott	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Cemented pan, erodes easily.	Erodes easily, cemented pan.
Bryden	Moderate: seepage, depth to rock, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Cemented pan, erodes easily.	Erodes easily, cemented pan.
38:							
Endicott	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Slope, cemented pan, erodes easily.	Slope, erodes easily, cemented pan.
Bryden	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Slope, cemented pan, erodes easily.	Slope, erodes easily, cemented pan.
39:							
Endicott	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, cemented pan, erodes easily.	Slope, cemented pan, erodes easily.	Slope, erodes easily, cemented pan.
Oliphant	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
40-- Entic Haploxerolls	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
41:							
Gwin	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Vollmer	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
42---------- Haploxerolls	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
43---------- Hooverton	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
44---------- Immig	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
45---------- Jacket	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Erodes easily, percs slowly.	Erodes easily, percs slowly.
46---------- Jacket	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
47:							
Jacket----------	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
Larkin----------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
48---------- Joel	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
49---------- Joel	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
50:							
Joel----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Erodes easily	Erodes easily.
Setters----------	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
51:							
Joel----------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
51:							
Setters	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
52 Johnson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
53:							
Johnson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Dragnot	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
Dragnot, dry	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
54:							
Johnson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Kruse	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
55:							
Johnson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Labuck	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Slope, depth to rock, soil blowing.	Slope, droughty, depth to rock.
56:							
Joseph	Severe: seepage.	Severe: seepage, large stones.	Severe: large stones, cutbanks cave.	Deep to water	Large stones, droughty, fast intake.	Large stones, too sandy.	Large stones, droughty, rooting depth.
Tombeall	Severe: seepage.	Severe: seepage, wetness.	Moderate: slow refill.	Flooding, large stones, frost action.	Wetness, flooding.	Wetness	Wetness.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
57:							
Kettenbach	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Kettenbach, moist	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Gwin	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
58:							
Kettenbach	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Keuterville	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
59:							
Kettenbach	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Rock outcrop.							
60, 61 Keuterville	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
62:							
Keuterville	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
Rock outcrop.							
63, 64 Klickson	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
65:							
Klickson	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Agatha	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
66:							
Klickson	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Hooverton	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
67:							
Klickson	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Rock outcrop.							
68:							
Klickson	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Uptmor	Severe: slope.	Severe: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
69--	Severe:	Moderate:	Severe:	Deep to water	Slope,	Slope,	Slope,
Kruse	seepage, slope.	thin layer.	no water.		erodes easily.	erodes easily.	erodes easily.
70:							
Lapwai	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Favorable	Erodes easily	Erodes easily.
Bridgewater	Severe: seepage.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Large stones, droughty.	Large stones, too sandy, soil blowing.	Large stones, droughty.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
71---------- Larabee	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
72:							
Larabee----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Gwin----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
73:							
Larabee----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Zaza----------	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Seddow----------	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
74:							
Larkin----------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
Driscoll----------	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
75:							
Latahco----------	Moderate: seepage.	Moderate: wetness.	Severe: no water.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.
Thatuna----------	Moderate: seepage.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
76:							
Lauby----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
76:							
Southwick	Severe: slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
77:							
Lickskillet	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Alpowa	Severe: slope.	Severe: piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
Rock outcrop.							
78	Severe:	Severe:	Severe:	Deep to water	Slope,	Slope,	Large stones,
Limekiln	depth to rock, slope.	thin layer.	no water.		large stones, droughty.	large stones, depth to rock.	slope, droughty.
79:							
Limekiln	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Crowers	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
80	Severe:	Moderate:	Severe:	Deep to water	Slope,	Slope,	Slope,
Linville	slope.	piping.	no water.		erodes easily.	erodes easily.	erodes easily.
81:							
Linville	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Kettenbach	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
82:							
Linville	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Waha	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
83:							
Mallory	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Jacket	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
84:							
Maloney	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.	Slope, depth to rock.
Zaza	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
85:							
Meland	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Jacket	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, erodes easily, percs slowly.	Slope, erodes easily, percs slowly.
86:							
Meland	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Keuterville	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones.	Large stones, slope, droughty.
87:							
Mohler	Moderate: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
Nez Perce	Moderate: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
Uhlorn	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
88--Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
89:							
Naff	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Palouse	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
90:							
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Palouse	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
91:							
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Palouse	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
92:							
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Palouse	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
Garfield	Severe: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.	Slope, percs slowly.
93:							
Naff	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Thatuna	Moderate: seepage, slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
94:							
Naff	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
94:							
Waha	Moderate: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Depth to rock, erodes easily.	Erodes easily, depth to rock.
95, 96:							
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Waha	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
97 Nez Perce	Moderate: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
98 Nez Perce	Moderate: seepage.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action.	Wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
99:							
Nez Perce	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
Uhlorn	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
100 Oliphant	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
101 Oliphant	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
102 Oliphant, gravelly substratum	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
103:							
Oliphant	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
103:							
Alpowa	Severe: seepage, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
104:							
Oliphant	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Hatwai	Moderate: seepage, slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily	Excess sodium, erodes easily.
105:							
Oliphant	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Stember	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, erodes easily.
106:							
Palouse	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Erodes easily	Erodes easily.
Athena	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
107:							
Palouse	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.	Slope, erodes easily.
Athena	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
108. Pits, gravel							
109 Redmore	Moderate: seepage, cemented pan, slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, erodes easily.	Erodes easily	Excess sodium, erodes easily, percs slowly.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
110: Riverwash.							
Aquents	Severe: seepage.	Severe: seepage, large stones, wetness.	Severe: large stones, cutbanks cave.	Flooding, large stones, cutbanks cave.	Large stones, wetness, droughty.	Large stones, wetness, too sandy.	Large stones, wetness, droughty.
111: Rock outcrop.							
Flybow	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
112--Seddow	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
113--Setters	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
114--Shilla	Moderate: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Large stones, erodes easily.	Large stones, erodes easily.
115: Shilla	Severe: slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
Seddow	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
116--Slickpoo	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
117: Slickpoo	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Broadax	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
118---------- Southwick	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
119:							
Southwick--------	Severe: slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Bluesprin--------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, large stones, depth to rock.	Large stones, slope, erodes easily.
120:							
Southwick--------	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
Driscoll---------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, percs slowly.
121:							
Southwick--------	Severe: slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Driscoll---------	Severe: slope.	Severe: piping.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
122:							
Southwick--------	Severe: slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Larkin----------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
123:							
Sweiting---------	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Joel-------------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
124---------- Talmaks	Moderate: slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
125---------- Talmaks	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
126:							
Talmaks----------	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Seddcw----------	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.	Large stones, slope, erodes easily.
127:							
Tammany----------	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, too sandy.	Large stones, slope, droughty.
Chard----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Rock outcrop.							
128---------- Taney	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
129, 130:							
Taney----------	Severe: slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
Joel----------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.	Slope, erodes easily.
131:							
Taney----------	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
Setters----------	Moderate: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
132:							
Taney	Moderate: seepage, slope.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Erodes easily, rooting depth.
Setters	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
133, 134, 135:							
Thatuna	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
136:							
Thatuna	Severe: slope.	Moderate: wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Slope, erodes easily, percs slowly.
Naff	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Tilma	Severe: slope.	Severe: thin layer.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, wetness, percs slowly.	Slope, percs slowly.
137 Tombeall	Severe: seepage.	Severe: seepage, wetness.	Moderate: slow refill.	Large stones, frost action.	Wetness	Wetness	Wetness.
138 Uhlig	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
139, 140 Uhlig	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
141 Uhlorn	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
142:							
Uhlorn	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
142:							
Nez Perce	Moderate: seepage, slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily.
143:							
Uhlorn	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Nez Perce	Severe: slope.	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, frost action, slope.	Slope, wetness, percs slowly.	Slope, erodes easily, wetness.	Wetness, slope, erodes easily.
144:							
Uhlorn	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Vollmer	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
145:							
Urban land.							
Wistona	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, erodes easily.	Erodes easily, soil blowing.	Erodes easily.
146	Severe:	Severe:	Severe:	Deep to water	Slope,	Slope,	Slope,
Uvi	seepage, slope.	piping.	no water.		erodes easily.	erodes easily.	erodes easily.
147	Moderate:	Severe:	Severe:	Deep to water	Slope,	Depth to rock,	Erodes easily,
Vollmer	depth to rock, slope.	thin layer.	no water.		depth to rock, erodes easily.	erodes easily.	depth to rock.
148	Severe:	Severe:	Severe:	Deep to water	Slope,	Slope,	Slope,
Vollmer	slope.	thin layer.	no water.		depth to rock, erodes easily.	depth to rock, erodes easily.	erodes easily, depth to rock.
149:							
Watama	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.

Table 14.--Water Management--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
149:							
Flybow	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
150:							
Webbridge	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
Agatha	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones.	Slope, large stones.	Large stones, slope.
151:							
Westlake	Moderate: seepage.	Severe: wetness.	Severe: slow refill.	Flooding, frost action.	Wetness, erodes easily, flooding.	Erodes easily, wetness.	Erodes easily.
Latahco	Moderate: seepage.	Moderate: wetness.	Severe: no water.	Flooding, frost action.	Wetness, flooding.	Erodes easily, wetness.	Erodes easily.
152--- Wilkins	Slight	Moderate: hard to pack, wetness.	Severe: no water.	Percs slowly, flooding, frost action.	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
153--- Wistona	Moderate: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, erodes easily.	Erodes easily, soil blowing.	Erodes easily.
154:							
Zaza	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Slope, large stones, depth to rock.	Large stones, slope, droughty.
Sweiting	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.

Table 15.--Engineering Index Properties

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
1, 2----------	0-15	Loam----------	CL, CL-ML	A-4, A-6	0	0-10	90-100	90-100	85-100	60-80	25-35	5-15
Agatha	15-23	Cobbly clay loam, gravelly loam, very gravelly silt loam.	CL, GC	A-6, A-2	0	15-45	50-80	45-75	40-75	30-60	30-40	10-20
	23-47	Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam.	GC	A-2, A-6, A-7	0-5	30-80	35-60	30-55	25-50	20-45	30-45	10-25
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
3:												
Agatha-------	0-15	Loam----------	CL, CL-ML	A-4, A-6	0	0-10	90-100	90-100	85-100	60-80	25-35	5-15
	15-23	Cobbly clay loam, gravelly loam, very gravelly silt loam.	CL, GC	A-6, A-2	0	15-45	50-80	45-75	40-75	30-60	30-40	10-20
	23-47	Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam.	GC	A-2, A-6, A-7	0-5	30-80	35-60	30-55	25-50	20-45	30-45	10-25
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												
4----------	0-11	Loam----------	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-95	60-75	25-35	5-15
Ahsahka	11-32	Loam, silt loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-95	65-85	25-40	5-20
	32-60	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	0-10	90-100	85-95	80-90	70-85	40-60	15-35
5:												
Almota-------	0-17	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	75-100	25-35	5-15
	17-24	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-90	65-90	25-35	5-15
	24-35	Gravelly silt loam.	CL, CL-ML	A-4, A-6	0	0	65-80	60-75	55-75	55-75	25-35	5-15
	35-39	Very gravelly gravelly silt loam.	CL, CL-ML,	A-4, A-6	0	0	55-75	45-70	40-70	40-70	25-35	5-15
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
5:												
Athena--------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-44	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	44-64	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
Hatwai--------	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	13-16	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-95	20-30	NP-10
	16-28	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-95	30-45	10-20
	28-60	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-40	5-20
6:												
Almota--------	0-17	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	75-100	25-35	5-15
	17-24	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-90	65-90	25-35	5-15
	24-35	Gravelly silt loam.	CL, CL-ML	A-4, A-6	0	0	65-80	60-75	55-75	55-75	25-35	5-15
	35-39	Very gravelly silt loam, gravelly silt loam.	CL, CL-ML, GC, GM-GC	A-4, A-6	0	0	55-75	45-70	40-70	40-70	25-35	5-15
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Linville------	0-19	Silt loam-----	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95	70-85	25-35	5-15
	19-67	Gravelly silt loam.	CL	A-6	0	0-15	65-80	60-75	55-70	50-65	30-40	10-15
7, 8:												
Alpowa--------	0-8	Cobbly silt loam.	ML, CL-ML	A-4	0	15-25	75-90	80-90	65-90	70-90	20-30	NP-10
	8-13	Very cobbly silt loam.	ML, CL-ML, GM, GM-GC	A-4	0	40-45	65-85	55-80	40-80	45-80	20-30	NP-10
	13-60	Very cobbly silt loam, very gravelly loam, very cobbly loam.	ML, CL-ML, GM, GM-GC	A-4, A-2	0-5	30-50	45-75	35-70	25-70	30-70	20-30	NP-10
Lickskillet---	0-5	Stony silt loam.	CL	A-6	5-10	5-10	70-95	60-80	55-75	50-65	30-35	10-15
	5-16	Very gravelly silty clay loam, extremely gravelly silty clay loam, very gravelly loam.	GC	A-2, A-6, A-7	0	0-30	30-55	20-50	15-45	10-40	35-45	15-20
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
9----------	0-3	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	75-100	25-35	5-15
Aquolls	3-10	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	75-100	25-40	5-20
	10-18	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-100	25-35	5-10
	18-38	Silty clay loam, silt loam, gravelly clay loam.	CL, GC, CH	A-6, A-7	0	0	60-100	50-100	45-100	35-100	30-55	10-30
	38-42	Extremely gravelly clay loam, very gravelly loam, very gravelly clay loam.	GC	A-2, A-6, A-7	0	15-45	30-65	20-60	20-55	15-50	30-50	10-25
	42	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
10----------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
Athena	14-44	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	44-64	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
11:												
Bakeoven-----	0-3	Very stony loam.	GM, SM	A-4	15-40	10-20	65-80	60-75	50-70	35-50	25-35	NP-10
	3-6	Very gravelly clay loam, very cobbly loam, very gravelly loam.	GM, GC	A-4, A-6	0-15	10-40	50-65	45-60	40-55	35-50	30-40	5-15
	6	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Watama-------	0-11	Silt loam-----	ML, CL	A-4, A-6	0	0	100	85-100	80-95	80-95	30-40	5-15
	11-34	Silt loam-----	ML, CL	A-4, A-6	0	0	95-100	80-90	75-85	65-80	30-40	5-15
	34-38	Gravelly silt loam.	ML, CL	A-4, A-6	0	0-10	70-80	60-75	60-70	55-65	30-40	5-15
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
12:												
Boles--------	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	25-40	5-15
	13-17	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-100	25-35	5-10
	17-45	Silty clay, clay.	CH	A-7	0	0	100	100	95-100	90-100	50-70	25-40
	45-70	Silty clay loam, silty clay, clay.	CL, CH	A-7	0	0	100	100	95-100	90-100	45-70	20-40
Joel---------	0-18	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	18-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	10-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
13:												
Bridgewater--	0-16	Extremely gravelly sandy loam.	GM-GC, GM, GP-GM	A-1	0	30-45	25-45	15-30	10-20	5-15	20-30	NP-10
	16-34	Extremely gravelly loam, extremely gravelly sandy loam, extremely cobbly sandy loam.	GM-GC, GM	A-1, A-2	0	30-55	30-60	20-45	15-40	10-30	20-30	NP-10
	34-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly sand.	GM, GP, GP-GM	A-1	0	45-55	25-55	15-45	5-30	0-15	---	NP
Joseph-------	0-10	Extremely cobbly loamy coarse sand.	GP-GM	A-1	0-5	40-55	20-55	10-45	5-35	5-10	---	NP
	10-60	Extremely cobbly loamy coarse sand, extremely cobbly sand, extremely gravelly coarse sand.	GP, GP-GM	A-1	0-5	35-55	20-55	10-40	5-35	0-10	---	NP
14, 15--------	0-16	Silt loam-----	ML	A-4, A-6	0	0	100	100	100	95-100	30-40	5-15
Broadax	16-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-20
	33-37	Silt loam-----	CL	A-6	0	0	100	100	100	95-100	30-40	10-15
	37-65	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
16, 17:												
Broadax------	0-16	Silt loam-----	ML	A-4, A-6	0	0	100	100	100	95-100	30-40	5-15
	16-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-20
	33-37	Silt loam-----	CL	A-6	0	0	100	100	100	95-100	30-40	10-15
	37-65	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
Hatwai-------	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	13-21	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-95	20-30	NP-10
	21-36	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-95	30-45	10-20
	36-66	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-40	5-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
18:												
Caldwell-----	0-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	85-100	25-35	10-15
	26-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	95-100	95-100	85-100	25-45	10-20
Latah--------	0-19	Silt loam-----	ML	A-4	0	0	100	100	95-100	95-100	25-35	NP-10
	19-30	Silt loam-----	ML	A-4	0	0	100	100	95-100	95-100	25-35	NP-10
	30-60	Silty clay, silty clay loam, clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-55	20-30
19:												
Calouse------	0-10	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	10-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	23-32	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	32-68	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	80-100	25-35	5-15
Almota-------	0-17	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	75-100	25-35	5-15
	17-24	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	80-95	75-90	70-90	65-90	25-35	5-15
	24-35	Gravelly silt loam.	CL, CL-ML	A-4, A-6	0	0	65-80	60-75	55-75	55-75	25-35	5-15
	35-39	Very gravelly silt loam, gravelly silt loam.	CL, CL-ML, GC, GM-GC	A-4, A-6	0	0	55-75	45-70	40-70	40-70	25-35	5-15
	39	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
20:												
Calouse------	0-10	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	10-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	23-32	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	32-68	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-100	80-100	25-35	5-15
Endicott-----	0-15	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	15-22	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	22-29	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	29-38	Gravelly loam, very gravelly loam, gravelly silt loam.	GM, ML	A-4	0	0-10	45-80	40-75	35-70	30-65	30-40	5-10
	38-60	Strongly cemented.	---	---	---	---	---	---	---	---	---	---
Bryden-------	0-10	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	10-19	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-20
	19-31	Silt loam-----	CL	A-6	0	0	95-100	90-100	85-100	80-95	30-40	10-20
	31-37	Very gravelly loam, very gravelly silt loam, gravelly loam.	GC, CL	A-6	0	0-10	55-80	45-75	40-70	35-65	30-40	10-15
	37-60	Indurated-----	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
21, 22-------- Carlinton	0-8	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	8-22	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-15
	22-28	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-15
	28-50	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-20
	50-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-20
23:												
Carlinton----	0-5	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	5-32	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-15
	32-36	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	25-35	10-15
	36-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-20
	55-60	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	15-20
Talmaks------	0-3	Silt loam-----	ML	A-5	0	0	100	100	95-100	90-100	30-45	5-10
	3-16	Silt loam-----	ML	A-4	0	0	100	100	95-100	90-100	30-40	5-10
	16-47	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	47-70	Silty clay loam.	CL	A-7	0	0	90-100	85-100	80-100	75-100	40-50	15-25
24:												
Cavendish----	0-8	Silt loam-----	ML, CL-ML	A-4	0	0	95-100	90-100	85-100	80-100	25-35	5-10
	8-30	Silt loam, gravelly silty clay loam, silty clay loam.	CL	A-6	0	0	65-95	60-90	60-85	55-75	30-40	10-15
	30-43	Gravelly clay loam, clay loam, cobbly clay loam.	CL	A-6	0	0-30	60-95	55-90	50-80	45-65	35-40	15-20
	43	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Taney--------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	23-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	29-36	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-50	10-25
	36-63	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	30-50	10-25
25, 26, 27---- Chard	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
28:												
Chard--------	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP
Chard, moist	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP
29:												
Chard--------	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP
Tammany------	0-4	Silt loam-----	CL-ML, CL	A-4, A-6	0	0-5	80-90	75-90	65-85	55-75	25-35	5-15
	4-10	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC	A-2, A-4, A-6	0	15-30	45-65	35-60	30-50	20-40	25-35	5-15
	10-17	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC	A-2, A-4, A-6	0	15-30	45-65	35-60	30-50	20-40	25-35	5-15
	17-29	Extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam.	GM, GM-GC, GP-GM	A-1, A-2	0	30-50	30-65	15-50	10-40	5-30	20-30	NP-10
	29-60	Extremely gravelly coarse sand.	GP	A-1	0	30-50	25-50	10-35	5-15	0-5	---	NP

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
30:												
Chard--------	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP
Urban land.												
31----------	0-2	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
Cramont	2-14	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	14-44	Silty clay loam, silty clay.	CL, CH	A-7	0	0	90-100	90-100	85-100	80-100	40-55	20-35
	44-65	Silty clay loam, clay loam, cobbly clay loam.	CL	A-7	0	0-20	85-100	80-100	75-100	70-100	40-50	20-30
32:												
Cramont------	0-2	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	2-14	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	14-44	Silty clay loam, silty clay.	CL, CH	A-7	0	0	90-100	90-100	85-100	80-100	40-55	20-35
	44-65	Silty clay loam, clay loam, cobbly clay loam.	CL	A-7	0	0-20	85-100	80-100	75-100	70-100	40-50	20-30
Culdesac-----	0-3	Silt loam-----	ML, MH	A-5	0	0	90-100	75-100	70-100	65-95	40-60	5-10
	3-18	Silt loam-----	ML	A-4, A-5	0	0	90-100	75-100	70-100	65-95	30-50	NP-10
	18-54	Silty clay loam.	CL	A-6, A-7	0	0-15	75-100	70-100	65-100	55-95	35-45	15-25
	54-60	Clay loam, silty clay loam, gravelly clay loam.	CL	A-6, A-7	0	0-15	75-100	70-100	65-100	55-95	35-45	15-25
33:												
Cramont------	0-2	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	2-14	Silt loam-----	ML	A-4, A-6	0	0	100	100	95-100	90-100	30-40	5-15
	14-44	Silty clay loam, silty clay.	CL, CH	A-7	0	0	90-100	90-100	85-100	80-100	40-55	20-35
	44-65	Silty clay loam, clay loam, cobbly clay loam.	CL	A-7	0	0-20	85-100	80-100	75-100	70-100	40-50	20-30

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
33:												
Seddow-------	0-4	Silt loam-----	ML	A-4, A-6	0	0	95-100	90-100	85-100	80-95	30-40	5-15
	4-13	Silt loam-----	ML	A-4, A-6	0	0	90-100	80-100	75-100	70-95	30-40	5-15
	13-29	Silty clay loam, gravelly clay loam, gravelly silt loam.	CL, ML	A-6, A-7	0	0-25	70-95	65-90	60-85	50-80	35-50	10-25
	29-48	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam.	GC	A-2, A-7	0	30-55	40-65	30-60	25-55	20-50	40-50	15-25
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
34----------	0-10	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
Crowers	10-27	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	90-100	90-100	85-100	80-95	25-35	5-15
	27-31	Silt loam, cobbly silt loam.	CL-ML, CL	A-4, A-6	0	0-25	85-90	80-90	75-90	70-85	25-40	5-15
	31-41	Very cobbly silt loam, extremely cobbly silt loam.	CL-ML, CL, GM-GC, GC	A-4, A-6	0-5	40-50	50-85	45-80	40-75	35-70	25-40	5-15
	41-62	Cobbly silt loam.	CL-ML, CL	A-4, A-6	0-5	15-25	80-90	75-90	65-85	60-80	25-40	5-15
35----------	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
Driscoll	13-31	Silt loam, silt.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-30	5-15
	31-46	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-70	20-40
	46-60	Silty clay loam.	CL	A-7	0	0	100	95-100	95-100	90-100	40-50	15-25
36:												
Driscoll-----	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	13-31	Silt loam, silt.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-30	5-15
	31-46	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-70	20-40
	46-60	Silty clay loam.	CL	A-7	0	0	100	95-100	95-100	90-100	40-50	15-25
Larkin-------	0-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	20-30	5-10
	19-61	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
37, 38:												
Endicott	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	12-20	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	20-30	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	30-36	Gravelly loam, very gravelly loam, gravelly silt loam.	GM, ML	A-4	0	0-10	45-80	40-75	35-70	30-65	30-40	5-10
	36-60	Strongly cemented.	---	---	---	---	---	---	---	---	---	---
Bryden	0-10	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	10-19	Silty clay loam, silt loam.	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-20
	19-31	Silt loam	CL	A-6	0	0	95-100	90-100	85-100	80-95	30-40	10-20
	31-37	Very gravelly loam, very gravelly silt loam, gravelly loam.	GC, CL	A-6	0	0-10	55-80	45-75	40-70	35-65	30-40	10-15
	37-60	Indurated	---	---	---	---	---	---	---	---	---	---
39:												
Endicott	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	12-20	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	20-30	Silt loam	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
	30-36	Gravelly loam, very gravelly loam, gravelly silt loam.	GM, ML	A-4	0	0-10	45-80	40-75	35-70	30-65	30-40	5-10
	36-60	Strongly cemented.	---	---	---	---	---	---	---	---	---	---
Oliphant	0-16	Silt loam	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	16-24	Silt loam	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-29	Silt loam	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	29-62	Silt loam	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
40	0-8	Gravelly loam	GM-GC, CL-ML	A-4	0	0	55-80	50-75	45-70	35-55	25-30	5-10
Entic Haploxerolls	8-17	Gravelly loam, very gravelly loam, loam.	GM-GC, CL-ML	A-2, A-4	0	0	45-85	35-85	30-80	25-65	25-30	5-10
	17-28	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
41:												
Gwin	0-6	Very stony silt loam.	GC, CL	A-6	10-20	15-25	50-70	45-65	40-65	35-60	30-40	10-15
	6-12	Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam.	GC, CL	A-2, A-6, A-7	0-10	30-40	30-65	20-60	20-60	15-55	35-50	15-25
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Vollmer	0-12	Silt loam	ML	A-4	0	0-5	95-100	85-100	80-100	80-100	30-35	5-10
	12-28	Silt loam, silty clay loam.	CL	A-6, A-7	0	0-5	90-100	80-100	75-100	75-100	30-45	10-20
	28-36	Cobbly silt loam, gravelly clay loam, gravelly silty clay loam.	CL	A-6, A-7	0	5-20	80-95	70-90	65-90	60-90	30-45	10-20
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
42 Haploxerolls	0-14	Silty clay loam.	CL	A-7	0	0	95-100	95-100	95-100	85-90	40-50	15-25
	14-23	Silty clay loam, silt loam, gravelly clay loam.	CL	A-6, A-7	0	0-15	80-100	75-100	65-100	50-90	35-50	15-25
	23-60	Silty clay loam, silt loam, gravelly clay loam.	CL, GC	A-6, A-7	0	0-25	70-100	65-100	55-100	40-90	35-50	15-25
43 Hooverton	0-11	Stony loam	GM-GC, GC, CL-ML, CL	A-4, A-6	1-5	0-10	65-80	60-75	50-70	40-60	25-40	5-15
	11-17	Very cobbly loam, very gravelly silt loam, very cobbly silt loam.	GC, CL	A-6	0-10	25-40	55-70	50-65	45-65	35-55	30-40	10-15
	17-35	Very cobbly clay loam, extremely cobbly clay loam, extremely gravelly silt loam.	GC, GP-GC	A-2, A-6, A-7	0-10	45-75	20-60	10-55	10-50	5-45	35-45	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
44---------- Immig	0-5	Very stony clay loam.	GC, CL, SC	A-7	15-25	5-10	65-80	60-75	50-70	40-60	40-45	15-20
	5-10	Gravelly clay loam, very gravelly clay loam.	GC, CL, SC	A-2, A-7	0	0-10	45-80	40-75	35-65	30-60	40-45	15-20
	10-29	Extremely gravelly clay.	GC, GP-GC	A-2	0	15-30	15-35	5-25	5-20	5-20	50-65	25-35
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
45, 46-------- Jacket	0-7	Silt loam-----	CL-ML	A-4	0	0	100	100	100	95-100	20-30	5-10
	7-27	Silty clay loam.	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	27-56	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	56-63	Silty clay, silty clay loam, gravelly silty clay loam.	CL, CH	A-7	0	0-5	75-100	70-100	65-100	65-100	45-65	20-35
47:												
Jacket-------	0-7	Silt loam-----	CL-ML	A-4	0	0	100	100	90-100	90-100	20-30	5-10
	7-27	Silty clay loam.	CL	A-7	0	0	100	100	90-100	90-100	40-50	15-25
	27-56	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	56-63	Silty clay, silty clay loam, gravelly silty clay loam.	CL, CH	A-7	0	0-5	75-100	70-100	65-100	65-100	45-65	20-35
Larkin-------	0-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	20-30	5-10
	19-61	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
48, 49-------- Joel	0-18	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	18-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	10-20
50, 51:												
Joel---------	0-18	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	18-25	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	25-66	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	10-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
50, 51:												
Setters	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	12-17	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-19	Silt loam	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	19-61	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-60	20-35
52 Johnson	0-10	Loam	CL-ML, SC-SM	A-4	0	0	95-100	75-100	65-95	45-75	20-30	5-10
	10-63	Clay loam, loam, gravelly clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	65-100	55-95	45-80	25-40	5-20
53:												
Johnson	0-10	Loam	CL-ML, SC-SM	A-4	0	0	95-100	75-100	65-95	45-75	20-30	5-10
	10-63	Clay loam, loam, gravelly clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	65-100	55-95	45-80	25-40	5-20
Dragnot	0-4	Stony loam	CL-ML, SC-SM	A-4	1-5	0	90-100	70-95	60-85	40-60	25-30	5-10
	4-11	Loam	CL-ML, SC-SM	A-4	0	0	90-100	75-95	65-85	40-60	25-30	5-10
	11-18	Loam, fine gravelly loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	90-100	70-95	60-85	40-65	25-35	5-15
	18-31	Very gravelly sandy loam, very gravelly loam.	SM	A-1	0	0	60-75	25-45	20-40	10-25	10-25	NP-10
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Dragnot, dry	0-4	Stony loam	CL-ML, SC-SM	A-4	1-5	0	90-100	70-95	60-85	40-60	25-30	5-10
	4-11	Loam	CL-ML, SC-SM	A-4	0	0	90-100	75-95	65-85	40-60	25-30	5-10
	11-18	Loam, fine gravelly loam.	CL, CL-ML, SC, SC-SM	A-4, A-6	0	0	90-100	70-95	60-85	40-65	25-35	5-15
	18-31	Very gravelly sandy loam, very gravelly loam.	SM	A-1	0	0	60-75	25-45	20-40	10-25	10-25	NP-5
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
54:												
Johnson	0-13	Loam	CL-ML, SC-SM	A-4	0	0	95-100	75-100	65-95	45-75	20-30	5-10
	13-60	Clay loam, loam, gravelly clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	65-100	55-95	45-80	25-40	5-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
54:												
Kruse--------	0-16	Loam----------	ML	A-4, A-6	0	0	100	100	80-100	70-80	30-40	5-15
	16-49	Clay loam, sandy clay loam, loam.	CL	A-6, A-7	0	0	100	95-100	80-95	60-80	35-45	15-25
	49-65	Coarse sandy loam, sandy loam.	ML, SM	A-4	0	0	95-100	85-100	55-75	35-55	25-35	5-10
55:												
Johnson------	0-13	Loam----------	CL-ML, SC-SM	A-4	0	0	95-100	75-100	65-95	45-75	20-30	5-10
	13-60	Clay loam, loam, gravelly clay loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	95-100	65-100	55-95	45-80	25-40	5-20
Labuck-------	0-4	Coarse sandy loam.	SM	A-1, A-2	0	0	95-100	75-90	45-65	20-35	25-30	NP-5
	4-15	Coarse sandy loam, fine gravelly coarse sandy loam, fine gravelly sandy loam.	SM	A-1, A-2	0	0	95-100	70-90	45-60	20-35	25-30	NP-5
	15-26	Fine gravelly coarse sandy loam, fine gravelly sandy loam.	SM	A-1, A-2	0	0	95-100	50-75	30-50	15-30	25-30	NP-5
	26	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
56:												
Joseph-------	0-10	Extremely cobbly loamy coarse sand.	GP-GM	A-1	0-5	40-55	20-55	10-45	5-35	5-10	---	NP
	10-60	Extremely cobbly loamy coarse sand, extremely cobbly sand, extremely gravelly coarse sand.	GP, GP-GM	A-1	0-5	35-55	20-55	10-40	5-35	0-10	---	NP
Tombeall-----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	65-80	25-35	5-15
	7-28	Silt loam, sandy loam, loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	80-100	75-100	55-90	45-80	25-35	5-15
	28-35	Very gravelly sandy loam, very gravelly loam.	GM-GC, GM	A-2, A-1	0	10-15	40-60	30-50	20-40	15-30	20-30	NP-10
	35-60	Extremely gravelly sandy loam, extremely gravelly loam.	GM, GP, GP-GM, GM-GC	A-1	0	25-40	20-45	5-30	5-25	0-20	20-30	NP-10

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
57:												
Kettenbach---	0-4	Stony silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	5-10	0-5	50-75	50-75	45-70	35-65	25-35	5-15
	4-10	Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam.	GC, CL	A-6, A-2	0	0-30	45-75	40-70	35-65	30-55	30-40	10-20
	10-25	Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam.	GC	A-2, A-6, A-7	0	5-55	25-55	25-55	20-50	15-45	30-45	10-20
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Kettenbach, moist-------	0-5	Stony silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	5-10	0-5	50-75	50-75	45-70	35-65	25-35	5-15
	5-15	Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam.	GC, CL	A-6, A-2	0	0-30	45-75	40-70	35-65	30-55	30-40	10-20
	15-30	Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam.	GC	A-2, A-6, A-7	0	5-55	25-55	25-55	20-50	15-45	30-45	10-20
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Gwin---------	0-6	Very stony silt loam.	GC, CL	A-6	10-20	15-25	50-70	45-65	40-65	35-60	30-40	10-15
	6-12	Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam.	GC, CL	A-2, A-6, A-7	0-10	30-40	30-65	20-60	20-60	15-55	35-50	15-25
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
58:												
Kettenbach---	0-4	Stony silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	5-10	0-5	50-75	50-75	45-70	35-65	25-35	5-15
	4-10	Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam.	GC, CL	A-6, A-2	0	0-30	45-75	40-70	35-65	30-55	30-40	10-20
	10-25	Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam.	GC	A-2, A-6, A-7	0	5-55	25-55	25-55	20-50	15-45	30-45	10-20
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Keuterville--	0-13	Gravelly silt loam.	CL-ML, GM-GC, SC-SM	A-4	0	0-5	60-90	55-75	45-65	35-60	20-30	5-10
	13-49	Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam.	GC	A-6	0	0-50	45-60	40-50	35-50	35-50	30-40	10-15
	49-61	Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam.	GM-GC, CL-ML	A-4, A-2	0	10-55	40-65	35-65	15-60	10-55	20-30	5-10
59:												
Kettenbach---	0-4	Stony silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	5-10	0-5	50-75	50-75	45-70	35-65	25-35	5-15
	4-10	Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam.	GC, CL	A-6, A-2	0	0-30	45-75	40-70	35-65	30-55	30-40	10-20
	10-25	Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam.	GC	A-2, A-6, A-7	0	5-55	25-55	25-55	20-50	15-45	30-45	10-20
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop.												

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
60, 61-------- Keuterville	0-13	Gravelly silt loam.	CL-ML, GM-GC, SC-SM	A-4	0	0-5	60-90	55-75	45-65	35-60	20-30	5-10
	13-49	Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam.	GC	A-6	0	0-50	45-60	40-50	35-50	35-50	30-40	10-15
	49-61	Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam.	GM-GC, CL-ML	A-4, A-2	0	10-55	40-65	35-65	15-60	10-55	20-30	5-10
62:												
Keuterville--	0-13	Gravelly silt loam.	CL-ML, GM-GC, SC-SM	A-4	0	0-5	60-90	55-75	45-65	35-60	20-30	5-10
	13-49	Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam.	GC	A-6	0	0-50	45-60	40-50	35-50	35-50	30-40	10-15
	49-61	Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam.	GM-GC, CL-ML	A-4, A-2	0	10-55	40-65	35-65	15-60	10-55	20-30	5-10
Rock outcrop.												
63, 64-------- Klickson	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	85-100	85-100	75-100	65-95	25-35	5-15
	7-15	Gravelly silt loam, very gravelly silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	0	10-25	60-100	55-85	50-85	45-80	25-35	5-15
	15-36	Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam.	GC, CL	A-6, A-7	0	25-45	50-70	45-65	40-65	35-60	35-45	15-20
	36-61	Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam.	GC, CL	A-6, A-7	0-5	40-50	40-65	30-60	30-60	25-55	35-45	15-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
65:												
Klickson-----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	85-100	85-100	75-100	65-95	25-35	5-15
	7-15	Gravelly silt loam, very gravelly silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	0	10-25	60-100	55-85	50-85	45-80	25-35	5-15
	15-36	Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam.	GC, CL	A-6, A-7	0	25-45	50-70	45-65	40-65	35-60	35-45	15-20
	36-61	Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam.	GC, CL	A-6, A-7	0-5	40-50	40-65	30-60	30-60	25-55	35-45	15-20
Agatha-------	0-15	Loam----------	CL, CL-ML	A-4, A-6	0	0-10	90-100	90-100	85-100	60-80	25-35	5-15
	15-23	Cobbly clay loam, gravelly loam, very gravelly silt loam.	CL, GC	A-6, A-2	0	15-45	50-80	45-75	40-75	30-60	30-40	10-20
	23-47	Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam.	GC	A-2, A-6, A-7	0-5	30-80	35-60	30-55	25-50	20-45	30-45	10-25
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
66:												
Klickson-----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	85-100	85-100	75-100	65-95	25-35	5-15
	7-15	Gravelly silt loam, very gravelly silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	0	10-25	60-100	55-85	50-85	45-80	25-35	5-15
	15-36	Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam.	GC, CL	A-6, A-7	0	25-45	50-70	45-65	40-65	35-60	35-45	15-20
	36-61	Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam.	GC, CL	A-6, A-7	0-5	40-50	40-65	30-60	30-60	25-55	35-45	15-20
Hooverton----	0-11	Stony loam-----	GM-GC, GC, CL-ML, CL	A-4, A-6	1-5	0-10	65-80	60-75	50-70	40-60	25-40	5-15
	11-17	Very cobbly loam, very gravelly silt loam, very cobbly silt loam.	GC, CL	A-6	0-10	25-40	55-70	50-65	45-65	35-55	30-40	10-15
	17-35	Very cobbly clay loam, extremely cobbly clay loam, extremely gravelly silt loam.	GC, GP-GC	A-2, A-6, A-7	0-10	45-75	20-60	10-55	10-50	5-45	35-45	15-20
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
67:												
Klickson-----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	85-100	85-100	75-100	65-95	25-35	5-15
	7-15	Gravelly silt loam, very gravelly silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	0	10-25	60-100	55-85	50-85	45-80	25-35	5-15
	15-36	Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam.	GC, CL	A-6, A-7	0	25-45	50-70	45-65	40-65	35-60	35-45	15-20
	36-61	Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam.	GC, CL	A-6, A-7	0-5	40-50	40-65	30-60	30-60	25-55	35-45	15-20
Rock outcrop.												
68:												
Klickson-----	0-7	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	85-100	85-100	75-100	65-95	25-35	5-15
	7-15	Gravelly silt loam, very gravelly silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	0	10-25	60-100	55-85	50-85	45-80	25-35	5-15
	15-36	Very gravelly silt loam, very cobbly silt loam, very cobbly silty clay loam.	GC, CL	A-6, A-7	0	25-45	50-70	45-65	40-65	35-60	35-45	15-20
	36-61	Very cobbly silt loam, extremely cobbly silty clay loam, extremely gravelly silty clay loam.	GC, CL	A-6, A-7	0-5	40-50	40-65	30-60	30-60	25-55	35-45	15-20
Uptmor-------	0-6	Silt loam-----	CL	A-6	0	0	85-100	85-100	75-100	65-95	30-40	10-15
	6-15	Clay loam, silty clay loam.	CL	A-6, A-7	0	0	85-100	85-100	75-100	65-95	35-45	15-20
	15-26	Clay, silty clay loam, silty clay.	CH	A-7	0	0-5	85-100	80-100	70-100	65-100	50-75	25-45
	26-47	Gravelly clay, cobbly clay, cobbly silty clay loam.	CH	A-7	0	10-25	70-95	65-90	55-90	50-90	50-75	25-45
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
69----------	0-16	Loam----------	ML	A-4, A-6	0	0	100	100	80-100	70-80	30-40	5-15
Kruse	16-49	Clay loam, sandy clay loam, loam.	CL	A-6, A-7	0	0	100	95-100	80-95	60-80	35-45	15-25
	49-65	Coarse sandy loam, sandy loam.	ML, SM	A-4	0	0	95-100	85-100	55-75	35-55	25-35	5-10
70:												
Lapwai-------	0-9	Silt loam-----	ML	A-4	0	0	90-100	80-100	75-95	60-85	25-35	NP-10
	9-28	Silt loam, loam.	ML	A-4	0	0	90-100	80-100	75-95	60-85	25-35	NP-10
	28-35	Silt loam, loam, gravelly loam.	ML	A-4	0	0	80-100	70-100	65-95	50-80	25-35	NP-10
	35-60	Very gravelly sandy loam, very gravelly loam.	GM	A-1, A-2, A-4	0	25-30	55-70	50-65	35-55	15-40	25-30	NP-5
Bridgewater--	0-16	Extremely gravelly sandy loam.	GM-GC, GM, GP-GM	A-1	0	30-45	25-45	15-30	10-20	5-15	20-30	NP-10
	16-34	Extremely gravelly loam, extremely gravelly sandy loam, extremely cobbly sandy loam.	GM-GC, GM	A-1, A-2	0	30-55	30-60	20-45	15-40	10-30	20-30	NP-10
	34-60	Extremely gravelly loamy coarse sand, extremely gravelly sand, extremely cobbly sand.	GM, GP, GP-GM	A-1	0	45-55	25-55	15-45	5-30	0-15	---	NP

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
71----------	0-4	Loam----------	CL	A-6	0	0	90-100	85-100	75-90	55-70	30-40	10-15
Larabee	4-10	Gravelly silt loam, loam.	CL	A-6	0	0-10	80-90	75-85	65-75	55-70	30-40	10-15
	10-20	Very gravelly silt loam, very gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7, A-2	0	10-25	55-70	45-65	40-65	30-55	30-45	10-20
	20-29	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam.	GC, GP-GC	A-2	0	30-50	25-65	15-60	15-60	10-50	40-50	15-25
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
72:												
Larabee------	0-4	Loam----------	CL	A-6	0	0	90-100	85-100	75-90	55-70	30-40	10-15
	4-10	Gravelly silt loam, loam.	CL	A-6	0	0-10	80-90	75-85	65-75	55-70	30-40	10-15
	10-20	Very gravelly silt loam, very gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7, A-2	0	10-25	55-70	45-65	40-65	30-55	30-45	10-20
	20-29	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam.	GC, GP-GC	A-2	0	30-50	25-65	15-60	15-60	10-50	40-50	15-25
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Gwin---------	0-6	Very stony silt loam.	GC, CL	A-6	10-20	15-25	50-70	45-65	40-65	35-60	30-40	10-15
	6-12	Extremely gravelly silty clay loam, very gravelly silt loam, very gravelly clay loam.	GC, CL	A-2, A-6, A-7	0-10	30-40	30-65	20-60	20-60	15-55	35-50	15-25
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
73:												
Larabee------	0-4	Loam----------	CL	A-6	0	0	90-100	85-100	75-90	55-70	30-40	10-15
	4-10	Gravelly silt loam, loam.	CL	A-6	0	0-10	80-90	75-85	65-75	55-70	30-40	10-15
	10-20	Very gravelly silt loam, very gravelly clay loam, gravelly loam.	CL, GC	A-6, A-7, A-2	0	10-25	55-70	45-65	40-65	30-55	30-45	10-20
	20-29	Extremely gravelly clay loam, extremely cobbly clay loam, very cobbly clay loam.	GC, GP-GC	A-2	0	30-50	25-65	15-60	15-60	10-50	40-50	15-25
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Zaza---------	0-4	Very stony loam.	CL-ML, GM-GC	A-2, A-4	15-30	0-15	55-80	50-75	40-70	30-55	20-30	5-10
	4-8	Very cobbly loam, cobbly loam.	CL-ML, GM-GC	A-2, A-4	0-5	15-50	55-85	50-80	40-75	30-55	20-30	5-10
	8-14	Extremely cobbly loam, very cobbly loam.	GM-GC	A-2, A-4	0-5	55-70	35-75	25-70	20-65	15-50	20-30	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Seddow-------	0-4	Silt loam-----	ML	A-4, A-6	0	0	95-100	90-100	85-100	80-95	30-40	5-15
	4-13	Silt loam-----	ML	A-4, A-6	0	0	90-100	80-100	75-100	70-95	30-40	5-15
	13-29	Silty clay loam, gravelly clay loam, gravelly silt loam.	CL, ML	A-6, A-7	0	0-25	70-95	65-90	60-85	50-80	35-50	10-25
	29-48	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam.	GC	A-2, A-7	0	30-55	40-65	30-60	25-55	20-50	40-50	15-25
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
74:												
Larkin-------	0-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	20-30	5-10
	19-61	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
74:												
Driscoll-----	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	13-31	Silt loam, silt.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-30	5-15
	31-46	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-70	20-40
	46-60	Silty clay loam.	CL	A-7	0	0	100	95-100	95-100	90-100	40-50	15-25
75:												
Latahco------	0-13	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	13-22	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	22-35	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-100	15-30	NP-10
	35-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	90-100	90-100	85-100	80-100	35-45	15-25
Thatuna------	0-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
76:												
Lauby--------	0-17	Silt loam-----	CL	A-6	0	0-5	95-100	90-100	90-100	80-95	30-40	10-15
	17-24	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0-5	95-100	85-100	80-100	75-85	20-30	5-15
	24-50	Silty clay loam, clay loam.	CL	A-6, A-7	0	0-5	95-100	80-100	65-95	55-85	35-50	15-25
	50-60	Loam, gravelly loam.	ML, SM	A-4	0	0-5	90-100	65-100	50-85	40-80	20-25	NP-5
Southwick----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	9-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	26-32	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	25-30	5-10
	32-46	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
	46-64	Silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-100	30-50	10-25
77:												
Lickskillet--	0-5	Stony silt loam.	CL	A-6	5-10	5-10	70-95	60-80	55-75	50-65	30-35	10-15
	5-16	Very gravelly silty clay loam, extremely gravelly silty clay loam, very gravelly loam.	GC	A-2, A-6, A-7	0	0-30	30-55	20-50	15-45	10-40	35-45	15-20
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
77:												
Alpowa	0-8	Cobbly silt loam.	ML, CL-ML	A-4	0	15-25	75-90	80-90	65-90	70-90	20-30	NP-10
	8-13	Very cobbly silt loam.	ML, CL-ML, GM, GM-GC	A-4	0	40-45	65-85	55-80	40-80	45-80	20-30	NP-10
	13-60	Very cobbly silt loam, very gravelly loam, very cobbly loam.	ML, CL-ML, GM, GM-GC	A-4, A-2	0-5	30-50	45-75	35-70	25-70	30-70	20-30	NP-10
Rock outcrop.												
78	0-8	Very stony silt loam.	CL, GC	A-6	1-5	15-20	50-65	45-60	40-60	40-55	25-35	10-15
Limekiln	8-13	Very gravelly silt loam.	CL, GC	A-6	0	15-30	45-65	40-60	35-60	35-55	25-35	10-15
	13-16	Extremely gravelly silt loam, extremely cobbly silt loam, very cobbly silt loam.	GC	A-2, A-6	0	30-55	30-55	20-50	15-50	15-50	25-35	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
79:												
Limekiln	0-8	Very stony silt loam.	CL, GC	A-6	1-5	15-20	50-65	45-60	40-60	40-55	25-35	10-15
	8-13	Very gravelly silt loam.	CL, GC	A-6	0	15-30	45-65	40-60	35-60	35-55	25-35	10-15
	13-16	Extremely gravelly silt loam, extremely cobbly silt loam, very cobbly silt loam.	GC	A-2, A-6	0	30-55	30-55	20-50	15-50	15-50	25-35	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Crowers	0-10	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	10-27	Silt loam	CL-ML, CL	A-4, A-6	0	0	90-100	90-100	85-100	80-95	25-35	5-15
	27-31	Silt loam, cobbly silt loam.	CL-ML, CL	A-4, A-6	0	0-25	85-90	80-90	75-90	70-85	25-40	5-15
	31-41	Very cobbly silt loam, extremely cobbly silt loam.	CL-ML, CL, GM-GC, GC	A-4, A-6	0-5	40-50	50-85	45-80	40-75	35-70	25-40	5-15
	41-62	Cobbly silt loam.	CL-ML, CL	A-4, A-6	0-5	15-25	80-90	75-90	65-85	60-80	25-40	5-15
80	0-19	Silt loam	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95	70-85	25-35	5-15
Linville	19-67	Gravelly silt loam.	CL	A-6	0	0-15	65-80	60-75	55-70	50-65	30-40	10-15

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
81:												
Linville-----	0-19	Silt loam-----	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95	70-85	25-35	5-15
	19-67	Gravelly silt loam.	CL	A-6	0	0-15	65-80	60-75	55-70	50-65	30-40	10-15
Kettenbach---	0-4	Stony silt loam.	GM-GC, GC, CL-ML, CL	A-4, A-6	5-10	0-5	50-75	50-75	45-70	35-65	25-35	5-15
	4-10	Very gravelly silt loam, gravelly silty clay loam, gravelly silt loam.	GC, CL	A-6, A-2	0	0-30	45-75	40-70	35-65	30-55	30-40	10-20
	10-25	Extremely gravelly silty clay loam, very gravelly silt loam, very cobbly silty clay loam.	GC	A-2, A-6, A-7	0	5-55	25-55	25-55	20-50	15-45	30-45	10-20
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
82:												
Linville-----	0-19	Silt loam-----	CL-ML, CL	A-4	0	0-5	95-100	85-95	80-95	70-85	25-35	5-15
	19-67	Gravelly silt loam.	CL	A-6	0	0-15	65-80	60-75	55-70	50-65	30-40	10-15
Waha---------	0-13	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	13-29	Silty clay loam, silt loam.	CL	A-6	0	0	100	75-100	70-100	65-95	30-40	10-20
	29-34	Gravelly clay loam, gravelly silty clay loam, cobbly silty clay loam.	CL	A-6	0	0-25	70-80	65-75	60-75	55-75	30-40	10-20
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
83:												
Mallory------	0-7	Very stony loam.	GC	A-2, A-6	5-10	10-25	55-70	50-65	40-60	30-50	25-30	10-15
	7-15	Very gravelly clay loam.	GC	A-2, A-6, A-7	0	15-30	45-55	35-50	30-50	25-45	35-45	15-25
	15-34	Extremely gravelly clay, extremely gravelly clay loam.	GC	A-2	0	30-45	20-45	10-35	5-30	10-35	45-60	20-30
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
83:												
Jacket-------	0-7	Silt loam-----	CL-ML	A-4	0	0	100	100	100	95-100	20-30	5-10
	7-27	Silty clay loam.	CL	A-7	0	0	100	100	100	95-100	40-50	15-25
	27-56	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	56-63	Silty clay, silty clay loam, gravelly silty clay loam.	CL, CH	A-7	0	0-5	75-100	70-100	65-100	65-100	45-65	20-35
84:												
Maloney------	0-5	Fine gravelly silt loam.	SC, CL	A-6	0	0	90-100	60-85	50-80	40-75	30-40	10-15
	5-25	Fine gravelly loam, fine gravelly silt loam, silt loam.	CL, SC	A-6	0	0-15	90-100	60-85	50-80	40-75	30-40	10-15
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Zaza---------	0-4	Very stony loam.	CL-ML, GM-GC	A-2, A-4	15-30	0-15	55-80	50-75	40-70	30-55	20-30	5-10
	4-8	Very cobbly loam, cobbly loam.	CL-ML, GM-GC	A-2, A-4	0-5	15-50	55-85	50-80	40-75	30-55	20-30	5-10
	8-14	Extremely cobbly loam, very cobbly loam.	GM-GC	A-2, A-4	0-5	55-70	35-75	25-70	20-65	15-50	20-30	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
85:												
Meland-------	0-16	Silt loam-----	CL	A-6	0	0	95-100	95-100	90-100	75-85	30-40	10-15
	16-35	Clay loam, gravelly clay loam, gravelly silty clay loam.	CL	A-7	0	0-10	75-100	70-90	65-85	50-75	40-50	20-25
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	40-50	20-25
Jacket-------	0-7	Silt loam-----	CL-ML	A-4	0	0	100	100	90-100	90-100	20-30	5-10
	7-27	Silty clay loam.	CL	A-7	0	0	100	100	90-100	90-100	40-50	15-25
	27-56	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-65	20-35
	56-63	Silty clay, silty clay loam, gravelly silty clay loam.	CL, CH	A-7	0	0-5	75-100	70-100	65-100	65-100	45-65	20-35

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
86:												
Meland-------	0-16	Silt loam-----	CL	A-6	0	0	95-100	95-100	90-100	75-85	30-40	10-15
	16-35	Clay loam, gravelly clay loam, gravelly silty clay loam.	CL	A-7	0	0-10	75-100	70-90	65-85	50-75	40-50	20-25
	35	Unweathered bedrock.	---	---	---	---	---	---	---	---	40-50	20-25
Keuterville--	0-13	Gravelly silt loam.	CL-ML, GM-GC, SC-SM	A-4	0	0-5	60-90	55-75	45-65	35-60	20-30	5-10
	13-49	Very gravelly silty clay loam, very cobbly clay loam, very gravelly loam.	GC	A-6	0	0-50	45-60	40-50	35-50	35-50	30-40	10-15
	49-61	Very gravelly loam, very gravelly clay loam, very cobbly silty clay loam.	GM-GC, CL-ML	A-4, A-2	0	10-55	40-65	35-65	15-60	10-55	20-30	5-10
87:												
Mohler-------	0-11	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	11-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	23-29	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	29-68	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25
Nez Perce----	0-11	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	11-15	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	15-21	Silt loam, silt.	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	21-31	Silty clay----	CH	A-7	0	0	100	100	95-100	95-100	50-70	25-40
	31-66	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	95-100	90-100	85-100	40-70	15-40
Uhlorn-------	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	7-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-23	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	23-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	55-69	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
88	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
Naff	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
89, 90:												
Naff	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Palouse	0-15	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	15-27	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	27-50	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	50-63	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	35-40	15-20
91:												
Naff	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	12-20	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	20-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Palouse	0-15	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	15-27	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	27-50	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	50-63	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	35-40	15-20
92:												
Naff	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	12-20	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	20-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Palouse	0-15	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	15-27	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	27-50	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	50-63	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	35-40	15-20
Garfield	0-4	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	25-35	10-20
	4-29	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-55	20-30
	29-61	Silty clay loam, silt loam.	ML	A-6	0	0	100	100	95-100	95-100	35-40	10-15

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
93:												
Naff	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Thatuna	0-16	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
94, 95, 96:												
Naff	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Waha	0-13	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	13-29	Silty clay loam, silt loam.	CL	A-6	0	0	100	75-100	70-100	65-95	30-40	10-20
	29-34	Gravelly clay loam, gravelly silty clay loam, cobbly silty clay loam.	CL	A-6	0	0-25	70-80	65-75	60-75	55-75	30-40	10-20
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
97 Nez Perce	0-11	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	11-15	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	15-21	Silt loam, silt.	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	21-31	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	50-70	25-40
	31-66	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	95-100	90-100	85-100	40-70	15-40
98 Nez Perce	0-9	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	9-15	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	15-19	Silt loam, silt.	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	19-31	Silty clay	CH	A-7	0	0	100	100	95-100	95-100	50-70	25-40
	31-67	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	95-100	90-100	85-100	40-70	15-40

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
99:												
Nez Perce----	0-11	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	11-15	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	15-21	Silt loam, silt.	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	21-31	Silty clay----	CH	A-7	0	0	100	100	95-100	95-100	50-70	25-40
	31-66	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	95-100	90-100	85-100	40-70	15-40
Uhlorn-------	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	7-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-23	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	23-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	55-69	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25
100, 101------	0-16	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
Oliphant	16-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	29-62	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
102----------	0-8	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
Oliphant,	8-26	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
gravelly	26-36	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
substratum	36-62	Gravelly silt loam, very gravelly silt loam.	GM-GC, CL-ML	A-4	0	10-30	50-90	50-90	45-90	40-90	20-30	5-10
103:												
Oliphant-----	0-16	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	16-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	29-62	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
Alpowa-------	0-12	Silt loam-----	ML	A-4	0	0-15	80-100	80-95	70-90	55-80	20-35	NP-10
	12-60	Very cobbly sandy loam, very cobbly loam, very cobbly silt loam.	GM, SM	A-4, A-2	0	40-55	60-80	50-75	40-60	25-45	25-35	NP-10
104:												
Oliphant-----	0-16	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	16-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	29-62	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
104:												
Hatwai-------	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-35	5-15
	13-21	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-95	20-30	NP-10
	21-36	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-95	30-45	10-20
	36-66	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-95	25-40	5-20
105:												
Oliphant-----	0-8	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	8-26	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	26-36	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	36-62	Gravelly silt loam, very gravelly silt loam.	GM-GC, CL-ML	A-4	0	10-30	50-90	50-90	45-90	40-90	20-30	5-10
Stember------	0-9	Silt loam-----	CL	A-6	0	0-10	90-100	85-90	80-90	75-85	30-35	10-15
	9-13	Very gravelly silt loam, gravelly silt loam.	CL, GC	A-6	0	10-25	55-65	50-60	45-60	45-60	30-35	10-15
	13-30	Very gravelly loam, extremely cobbly loam.	GC	A-2, A-6	0	30-50	45-65	35-60	30-60	20-45	30-40	10-15
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
106, 107:												
Palouse------	0-15	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	15-27	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	27-50	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	50-63	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	35-40	15-20
Athena-------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-44	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	44-64	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
108.												
Pits, gravel												
109----------	0-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-95	30-40	10-15
Redmore	12-19	Silty clay, silty clay loam.	CH	A-7	0	0	100	100	95-100	90-95	50-60	30-40
	19-35	Silt loam, silty clay loam.	CL, CH	A-7	0	0	90-100	85-100	80-100	75-95	45-55	25-30
	35-42	Loam, silt loam.	CL	A-7	0	0	90-100	85-100	70-85	60-80	40-50	20-25
	42-46	Very gravelly loam.	GM	A-2, A-4	0	10-25	50-70	40-60	35-55	30-45	30-40	5-10
	46-60	Indurated-----	---	---	---	---	---	---	---	---	---	---
110:												
Riverwash.												

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
110:												
Aquents------	0-2	Very cobbly very fine sandy loam.	SC-SM, CL-ML	A-2, A-4	0	55-65	75-100	70-100	60-90	20-55	25-30	5-10
	2-60	Gravelly sandy loam, extremely cobbly sand, extremely gravelly loamy sand.	GP, GM-GC, SP, SC-SM	A-1, A-2	0-10	15-50	20-85	10-80	5-60	0-35	20-30	NP-10
111:												
Rock outcrop.												
Flybow-------	0-4	Very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	0	10-25	40-55	35-50	35-50	30-45	25-35	5-15
	4	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
112----------	0-4	Silt loam-----	ML	A-4, A-6	0	0	95-100	90-100	85-100	80-95	30-40	5-15
Seddow	4-13	Silt loam-----	ML	A-4, A-6	0	0	90-100	80-100	75-100	70-95	30-40	5-15
	13-29	Silty clay loam, gravelly clay loam, gravelly silt loam.	CL, ML	A-6, A-7	0	0-25	70-95	65-90	60-85	50-80	35-50	10-25
	29-48	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam.	GC	A-2, A-7	0	30-55	40-65	30-60	25-55	20-50	40-50	15-25
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
113----------	0-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
Setters	12-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	19-61	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-60	20-35
114----------	0-1	Silt loam-----	ML	A-4, A-5	0	0	90-100	70-100	65-95	55-90	35-50	NP-10
Shilla	1-16	Silt loam-----	ML	A-4, A-5	0	0	90-100	70-100	65-95	55-90	35-45	NP-10
	16-24	Cobbly loam, loam, cobbly clay loam.	ML	A-6, A-4	0	0-15	80-90	75-85	65-85	50-70	30-40	5-15
	24-53	Very cobbly clay loam, very gravelly clay loam, extremely cobbly clay loam.	GC, GM	A-2, A-6, A-7	0-30	15-70	30-55	20-50	15-45	10-40	35-45	10-20
	53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
115:												
Shilla	0-1	Silt loam	ML	A-4, A-5	0	0	90-100	70-100	65-95	55-90	35-50	NP-10
	1-16	Silt loam	ML	A-4, A-5	0	0	90-100	70-100	65-95	55-90	35-45	NP-10
	16-24	Cobbly loam, loam, cobbly clay loam.	ML	A-6, A-4	0	0-15	80-90	75-85	65-85	50-70	30-40	5-15
	24-53	Very cobbly clay loam, very gravelly clay loam, extremely cobbly clay loam.	GC, GM	A-2, A-6, A-7	0-30	15-70	30-55	20-50	15-45	10-40	35-45	10-20
	53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Seddow	0-4	Silt loam	ML	A-4, A-6	0	0	95-100	90-100	85-100	80-95	30-40	5-15
	4-13	Silt loam	ML	A-4, A-6	0	0	90-100	80-100	75-100	70-95	30-40	5-15
	13-29	Silty clay loam, gravelly clay loam, gravelly silt loam.	CL, ML	A-6, A-7	0	0-25	70-95	65-90	60-85	50-80	35-50	10-25
	29-48	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam.	GC	A-2, A-7	0	30-55	40-65	30-60	25-55	20-50	40-50	15-25
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
116 Slickpoo	0-12	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-40	5-15
	12-22	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	30-45	10-20
	22-37	Cobbly silty clay loam.	CL	A-6, A-7	0	15-30	75-95	70-90	65-90	60-85	35-50	15-25
	37-45	Very cobbly silt loam, very cobbly loam.	CL-ML, CL, GC	A-4, A-6	0	30-45	55-70	50-65	40-60	40-60	25-40	5-15
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
117:												
Slickpoo	0-12	Silt loam	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	90-95	25-40	5-15
	12-22	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	90-100	85-100	80-100	75-95	30-45	10-20
	22-37	Cobbly silty clay loam.	CL	A-6, A-7	0	15-30	75-95	70-90	65-90	60-85	35-50	15-25
	37-45	Very cobbly silt loam, very cobbly loam.	CL-ML, CL, GC	A-4, A-6	0	30-45	55-70	50-65	40-60	40-60	25-40	5-15
	45	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
117:												
Broadax------	0-16	Silt loam-----	ML	A-4, A-6	0	0	100	100	100	95-100	30-40	5-15
	16-33	Silty clay loam, silt loam.	CL	A-6, A-7	0	0	100	100	100	95-100	35-45	15-20
	33-37	Silt loam-----	CL	A-6	0	0	100	100	100	95-100	30-40	10-15
	37-65	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	100	95-100	25-40	5-15
118----------	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
Southwick	9-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	26-32	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	25-30	5-10
	32-46	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
	46-64	Silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-100	30-50	10-25
119:												
Southwick----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	9-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	26-32	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	25-30	5-10
	32-46	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
	46-64	Silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-100	30-50	10-25
Bluesprin----	0-14	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	75-95	75-90	70-85	60-80	25-35	5-15
	14-22	Very gravelly silty clay loam, very gravelly silt loam.	GC	A-2, A-6	0	15-35	45-55	40-50	35-50	30-50	30-40	10-20
	22-28	Extremely gravelly silty clay loam, extremely gravelly clay loam.	GC	A-2	0	20-50	30-40	25-35	20-30	15-30	30-40	10-20
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
120, 121:												
Southwick----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	9-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	26-32	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	25-30	5-10
	32-46	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
	46-64	Silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-100	30-50	10-25
Driscoll-----	0-13	Silt loam-----	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	95-100	20-30	5-15
	13-31	Silt loam, silt.	CL, CL-ML	A-4, A-6	0	0	100	100	95-100	90-100	20-30	5-15
	31-46	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	95-100	95-100	45-70	20-40
	46-60	Silty clay loam.	CL	A-7	0	0	100	95-100	95-100	90-100	40-50	15-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
122:												
Southwick----	0-9	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	9-26	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	26-32	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	25-30	5-10
	32-46	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-50	10-25
	46-64	Silty clay loam.	CL	A-6, A-7	0	0	95-100	90-100	85-100	80-100	30-50	10-25
Larkin-------	0-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	20-30	5-10
	19-61	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
123:												
Sweiting-----	0-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	12-23	Silty clay loam.	CL	A-6, A-7	0	0	90-100	85-100	65-100	65-100	35-50	15-30
	23-31	Very gravelly clay, very gravelly silty clay, gravelly clay.	CH, GC	A-2, A-7	0	0-20	40-70	35-65	35-65	30-65	50-70	25-40
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Joel---------	0-18	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	18-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	10-20
124, 125------	0-3	Silt loam-----	ML	A-5	0	0	100	100	95-100	90-100	30-45	5-10
Talmaks	3-16	Silt loam-----	ML	A-4	0	0	100	100	95-100	90-100	30-40	5-10
	16-47	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	47-70	Silty clay loam.	CL	A-7	0	0	90-100	85-100	80-100	75-100	40-50	15-25
126:												
Talmaks------	0-3	Silt loam-----	ML	A-5	0	0	100	100	95-100	90-100	30-45	5-10
	3-16	Silt loam-----	ML	A-4	0	0	100	100	95-100	90-100	30-40	5-10
	16-47	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	90-100	40-50	15-25
	47-70	Silty clay loam.	CL	A-7	0	0	90-100	85-100	80-100	75-100	40-50	15-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
126:												
Seddow-------	0-4	Silt loam-----	ML	A-4, A-6	0	0	95-100	90-100	85-100	80-95	30-40	5-15
	4-13	Silt loam-----	ML	A-4, A-6	0	0	90-100	80-100	75-100	70-95	30-40	5-15
	13-29	Silty clay loam, gravelly clay loam, gravelly silt loam.	CL, ML	A-6, A-7	0	0-25	70-95	65-90	60-85	50-80	35-50	10-25
	29-48	Extremely cobbly clay loam, very cobbly clay loam, extremely gravelly clay loam.	GC	A-2, A-7	0	30-55	40-65	30-60	25-55	20-50	40-50	15-25
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
127:												
Tammany------	0-4	Silt loam-----	CL-ML, CL	A-4, A-6	0	0-5	80-90	75-90	65-85	55-75	25-35	5-15
	4-10	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC	A-2, A-4, A-6	0	15-30	45-65	35-60	30-50	20-40	25-35	5-15
	10-17	Very gravelly loam, very gravelly sandy loam.	GM-GC, GC	A-2, A-4, A-6	0	15-30	45-65	35-60	30-50	20-40	25-35	5-15
	17-29	Extremely gravelly coarse sandy loam, very gravelly loam, extremely cobbly sandy loam.	GM, GM-GC, GP-GM	A-1, A-2	0	30-50	30-65	15-50	10-40	5-30	20-30	NP-10
	29-60	Extremely gravelly coarse sand.	GP	A-1	0	30-50	25-50	10-35	5-15	0-5	---	NP
Chard--------	0-15	Silt loam-----	ML	A-4	0	0	100	100	90-100	70-80	15-25	NP-5
	15-32	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	65-80	15-25	NP-5
	32-55	Loam, fine sandy loam, very fine sandy loam.	ML	A-4	0	0	95-100	95-100	80-95	55-75	15-25	NP-5
	55-62	Sand, loamy fine sand, fine sand.	SM	A-4, A-2	0	0	95-100	95-100	65-90	20-50	---	NP
Rock outcrop.												

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
128---------- Taney	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	23-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	29-36	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-50	10-25
	36-63	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	30-50	10-25
129, 130:												
Taney---------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	23-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	29-36	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-50	10-25
	36-63	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	30-50	10-25
Joel----------	0-18	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	18-24	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	90-100	20-30	5-10
	24-60	Silt loam, silty clay loam.	ML, CL	A-6, A-7	0	0	100	100	95-100	90-100	35-45	10-20
131, 132:												
Taney---------	0-14	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	14-23	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	23-29	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	29-36	Silt loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-50	10-25
	36-63	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	30-50	10-25
Setters------	0-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	12-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-19	Silt loam-----	CL-ML	A-4	0	0	100	100	95-100	95-100	25-30	5-10
	19-61	Silty clay loam, silty clay.	CL, CH	A-7	0	0	100	100	95-100	95-100	40-60	20-35
133:												
Thatuna------	0-16	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
Naff----------	0-18	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
134:												
Thatuna	0-16	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
Naff	0-12	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	12-20	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	20-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
135:												
Thatuna	0-16	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
Naff	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
136:												
Thatuna	0-16	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	16-31	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	31-37	Silt loam	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	37-61	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
Naff	0-18	Silt loam	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	18-25	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	25-60	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	15-25
Tilma	0-25	Silt loam	ML, CL-ML	A-4	0	0	100	100	100	95-100	20-30	NP-10
	25-60	Silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	100	95-100	40-60	20-35
137	0-7	Silt loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	75-95	65-80	25-35	5-15
Tombeall	7-28	Silt loam, sandy loam, loam.	CL-ML, CL, SC-SM, SC	A-4, A-6	0	0	80-100	75-100	55-90	45-80	25-35	5-15
	28-35	Very gravelly sandy loam, very gravelly loam.	GM-GC, GM	A-2, A-1	0	10-15	40-60	30-50	20-40	15-30	20-30	NP-10
	35-60	Extremely gravelly sandy loam, extremely gravelly loam.	GM, GP, GP-GM, GM-GC	A-1	0	25-40	20-45	5-30	5-25	0-20	20-30	NP-10

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
138, 139, 140	0-15	Silt loam-----	ML	A-4	0	0	95-100	90-100	80-100	65-80	20-30	NP-5
Uhlig	15-39	Loam, very fine sandy loam, silt loam.	ML	A-4	0	0	95-100	90-100	85-95	60-80	20-30	NP-5
	39-68	Very fine sandy loam, fine sandy loam.	ML, SM	A-4	0	0	90-100	75-100	60-80	40-55	20-30	NP-5
141----------	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
Uhlorn	7-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-23	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	23-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	55-69	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25
142, 143:												
Uhlorn-------	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	7-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-23	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	23-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	55-69	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25
Nez Perce----	0-11	Silty clay loam.	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-20
	11-15	Silt loam-----	CL-ML, CL	A-4, A-6	0	0	100	100	95-100	95-100	25-35	5-15
	15-21	Silt loam, silt.	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	21-31	Silty clay----	CH	A-7	0	0	100	100	95-100	95-100	50-70	25-40
	31-66	Silty clay, silty clay loam.	CH, CL	A-7	0	0	100	95-100	90-100	85-100	40-70	15-40
144:												
Uhlorn-------	0-7	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	7-17	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	17-23	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	23-55	Silty clay loam.	CL	A-6, A-7	0	0	100	100	95-100	95-100	35-50	15-25
	55-69	Silty clay loam.	CL	A-7	0	0	100	100	95-100	95-100	40-50	20-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
144:												
Vollmer------	0-12	Silt loam-----	ML	A-4	0	0-5	95-100	85-100	80-100	80-100	30-35	5-10
	12-28	Silt loam, silty clay loam.	CL	A-6, A-7	0	0-5	90-100	80-100	75-100	75-100	30-45	10-20
	28-36	Cobbly silt loam, gravelly clay loam, gravelly silty clay loam.	CL	A-6, A-7	0	5-20	80-95	70-90	65-90	60-90	30-45	10-20
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
145:												
Urban land.												
Wistona------	0-8	Very fine sandy loam.	ML	A-4	0	0	100	95-100	90-100	55-70	10-20	NP-5
	8-45	Very fine sandy loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	100	95-100	80-100	35-70	10-20	NP-5
	45-64	Very fine sandy loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	95-100	90-100	75-100	35-70	10-20	NP-5
146----------	0-4	Silt loam-----	CL-ML	A-4	0	0	95-100	90-100	80-90	70-80	25-30	5-10
Uvi	4-55	Loam, sandy loam.	CL-ML, SC-SM	A-2, A-4	0	0	95-100	75-100	40-85	25-70	25-30	5-10
	55-65	Very gravelly loam, very gravelly sandy loam.	SM	A-1, A-4	0	0	70-80	30-50	15-45	10-40	20-25	NP-5
147, 148------	0-12	Silt loam-----	ML	A-4	0	0-5	95-100	85-100	80-100	80-100	30-35	5-10
Vollmer	12-28	Silt loam, silty clay loam.	CL	A-6, A-7	0	0-5	90-100	80-100	75-100	75-100	30-45	10-20
	28-36	Cobbly silt loam, gravelly clay loam, gravelly silty clay loam.	CL	A-6, A-7	0	5-20	80-95	70-90	65-90	60-90	30-45	10-20
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
149:												
Watama-------	0-11	Silt loam-----	ML, CL	A-4, A-6	0	0	100	85-100	80-95	80-95	30-40	5-15
	11-34	Silt loam-----	ML, CL	A-4, A-6	0	0	95-100	80-90	75-85	65-80	30-40	5-15
	34-38	Gravelly silt loam.	ML, CL	A-4, A-6	0	0-10	70-80	60-75	60-70	55-65	30-40	5-15
	38	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
149:												
Flybow-------	0-4	Very gravelly silt loam.	GM-GC, GC	A-2, A-4, A-6	0	10-25	40-55	35-50	35-50	30-45	25-35	5-15
	4	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
150:												
Webbridge----	0-3	Silt loam-----	ML, SM	A-4, A-5	0	0	100	65-100	50-90	45-80	30-50	NP-10
	3-17	Silt loam-----	ML, SM	A-2, A-4, A-5	0	0	85-100	45-85	35-75	30-70	30-50	NP-10
	17-34	Cobbly clay loam, very cobbly clay loam, very gravelly loam.	CL, GC	A-2, A-6, A-7	0-5	25-40	60-85	55-80	45-75	35-55	30-45	10-20
	34-53	Extremely cobbly loam, very cobbly clay loam, very gravelly clay loam.	GC	A-2, A-6, A-7	0-5	30-70	25-65	15-60	15-55	10-40	30-45	10-20
	53	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Agatha-------	0-15	Loam----------	CL, CL-ML	A-4, A-6	0	0-10	90-100	90-100	85-100	60-80	25-35	5-15
	15-23	Cobbly clay loam, gravelly loam, very gravelly silt loam.	CL, GC	A-6, A-2	0	15-45	50-80	45-75	40-75	30-60	30-40	10-20
	23-47	Very cobbly clay loam, extremely cobbly loam, extremely cobbly clay loam.	GC	A-2, A-6, A-7	0-5	30-80	35-60	30-55	25-50	20-45	30-45	10-25
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
151:												
Westlake-----	0-10	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-45	10-20
	10-21	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	85-95	30-45	10-20
	21-49	Silt loam, silty clay loam.	CL	A-7	0	0	100	100	90-100	80-95	40-50	15-25
	49-64	Silt loam, loam, clay loam.	CL	A-6	0	0	80-100	75-100	60-95	55-80	30-40	10-20
Latahco------	0-13	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	13-22	Silt loam-----	CL	A-6, A-7	0	0	100	100	95-100	90-100	30-45	10-20
	22-35	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	90-100	15-30	NP-10
	35-60	Silt loam, silty clay loam.	CL	A-6, A-7	0	0	90-100	90-100	85-100	80-100	35-45	15-25

Table 15.--Engineering Index Properties--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
152---------- Wilkins	0-15	Silt loam-----	CL	A-6	0	0	100	100	95-100	95-100	30-40	10-15
	15-20	Silt loam-----	ML, CL-ML	A-4	0	0	100	100	95-100	95-100	25-35	5-10
	20-52	Silty clay----	CH	A-7	0	0	100	100	90-100	90-100	50-70	25-40
	52-64	Clay loam, silty clay loam.	CL, CH	A-6, A-7	0	0	100	95-100	85-100	70-100	35-55	15-30
153---------- Wistona	0-8	Very fine sandy loam.	ML	A-4	0	0	100	95-100	90-100	55-70	10-20	NP-5
	8-45	Very fine sandy loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	100	95-100	80-100	35-70	10-20	NP-5
	45-64	Very fine sandy loam, fine sandy loam, sandy loam.	ML, SM	A-4	0	0	95-100	90-100	75-100	35-70	10-20	NP-5
154: Zaza----------	0-4	Very stony loam.	CL-ML, GM-GC	A-2, A-4	15-30	0-15	55-80	50-75	40-70	30-55	20-30	5-10
	4-8	Very cobbly loam, cobbly loam.	CL-ML, GM-GC	A-2, A-4	0-5	15-50	55-85	50-80	40-75	30-55	20-30	5-10
	8-14	Extremely cobbly loam, very cobbly loam.	GM-GC	A-2, A-4	0-5	55-70	35-75	25-70	20-65	15-50	20-30	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Sweiting----- Sweiting-----	0-12	Silt loam-----	CL	A-6	0	0	100	100	95-100	90-100	30-40	10-15
	12-23	Silty clay loam.	CL	A-6, A-7	0	0	90-100	85-100	65-100	65-100	35-50	15-30
	23-31	Very gravelly clay, very gravelly silty clay, gravelly clay.	CH, GC	A-2, A-7	0	0-20	40-70	35-65	35-65	30-65	50-70	25-40
	31	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

Table 16.--Physical and Chemical Properties of the Soils

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm		K	T		Pct
1, 2	0-15	12-24	1.40-1.45	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	3	6	1-3
Agatha	15-23	18-30	1.45-1.55	0.2-2.0	0.13-0.17	5.6-6.5	0-0	Low	0.20			
	23-47	24-35	1.45-1.50	0.2-0.6	0.04-0.09	5.6-6.5	0-0	Low	0.10			
	47	---	---	---	---	---	---	---	---			
3:												
Agatha	0-15	12-24	1.40-1.45	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	3	6	1-3
	15-23	18-30	1.45-1.55	0.2-2.0	0.13-0.17	5.6-6.5	0-0	Low	0.20			
	23-47	24-35	1.45-1.50	0.2-0.6	0.04-0.09	5.6-6.5	0-0	Low	0.10			
	47	---	---	---	---	---	---	---	---			
Rock outcrop.												
4	0-11	15-22	1.30-1.50	0.6-2.0	0.15-0.18	6.1-7.3	0-0	Low	0.32	5	5	2-5
Ahsahka	11-32	18-30	1.20-1.40	0.2-2.0	0.16-0.21	6.1-7.3	0-0	Moderate	0.43			
	32-60	32-50	1.25-1.50	0.06-0.6	0.14-0.20	6.1-7.3	0-0	High	0.32			
5:												
Almota	0-17	18-22	1.15-1.35	0.6-2.0	0.17-0.22	6.6-7.8	0-0	Low	0.43	2	5	2-4
	17-24	18-22	1.25-1.45	0.6-2.0	0.15-0.20	6.6-7.8	0-0	Low	0.37			
	24-35	18-22	1.25-1.45	0.6-2.0	0.14-0.16	7.9-8.4	0-2	Low	0.32			
	35-39	18-22	1.25-1.45	0.6-2.0	0.10-0.12	7.9-8.4	0-2	Low	0.20			
	39	---	---	---	---	---	---	---	---			
Athena	0-14	16-22	1.15-1.30	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Low	0.37	5	5	2-4
	14-44	18-25	1.20-1.40	0.6-2.0	0.17-0.20	6.6-7.8	0-0	Low	0.49			
	44-64	14-22	1.25-1.50	0.6-2.0	0.16-0.18	7.4-8.4	0-0	Low	0.49			
Hatwai	0-13	14-22	1.20-1.30	0.6-2.0	0.18-0.20	6.1-7.3	---	Low	0.43	2	5	2-3
	13-16	10-18	1.20-1.30	0.6-2.0	0.18-0.20	6.6-7.8	---	Low	0.55			
	16-28	22-34	1.25-1.40	0.06-0.2	0.10-0.16	7.9-9.0	0-2	Moderate	0.49			
	28-60	16-30	1.20-1.40	0.2-0.6	0.10-0.16	7.9-9.6	2-4	Low	0.55			
6:												
Almota	0-17	18-22	1.15-1.35	0.6-2.0	0.17-0.22	6.6-7.8	0-0	Low	0.43	2	5	2-4
	17-24	18-22	1.25-1.45	0.6-2.0	0.15-0.20	6.6-7.8	0-0	Low	0.37			
	24-35	18-22	1.25-1.45	0.6-2.0	0.14-0.16	7.9-8.4	0-2	Low	0.32			
	35-39	18-22	1.25-1.45	0.6-2.0	0.10-0.12	7.9-8.4	0-2	Low	0.20			
	39	---	---	---	---	---	---	---	---			
Linville	0-19	15-25	1.15-1.25	0.6-2.0	0.17-0.20	6.6-7.8	---	Low	0.37	5	5	2-4
	19-67	20-27	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	---	Low	0.32			
7, 8:												
Alpowa	0-8	15-18	1.15-1.25	0.6-2.0	0.12-0.18	7.4-7.8	<2	Low	0.24	5	5	2-4
	8-13	15-18	1.25-1.45	0.6-2.0	0.08-0.12	7.4-7.8	<2	Low	0.20			
	13-60	15-18	1.25-1.45	0.6-2.0	0.07-0.12	7.4-9.0	<2	Low	0.17			
Lickskillet	0-5	22-27	1.15-1.35	0.6-2.0	0.12-0.15	6.6-7.8	0-0	Moderate	0.17	1	8	1-2
	5-16	23-33	1.30-1.40	0.6-2.0	0.06-0.09	6.6-8.4	0-2	Moderate	0.10			
	16	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
9----------	0-3	20-27	1.00-1.20	0.6-2.0	0.19-0.22	5.6-6.0	0-0	Moderate	0.20	4	6	5-7
Aquolls	3-10	20-40	1.00-1.20	0.2-2.0	0.19-0.22	5.6-6.0	0-0	Moderate	0.20			
	10-18	10-24	1.30-1.50	0.6-2.0	0.19-0.22	5.6-6.5	0-0	Moderate	0.49			
	18-38	20-45	1.30-1.50	0.2-0.6	0.12-0.20	5.6-6.5	0-0	High	0.37			
	38-42	20-40	1.30-1.50	0.2-0.6	0.08-0.12	5.6-6.5	0-0	High	0.10			
	42	---	---	---	---	---	---	---	---			
10----------	0-14	16-22	1.15-1.30	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Low	0.37	5	5	2-4
Athena	14-44	18-25	1.20-1.40	0.6-2.0	0.17-0.20	6.6-7.8	0-0	Low	0.49			
	44-64	14-22	1.25-1.50	0.6-2.0	0.16-0.18	7.4-8.4	0-0	Low	0.49			
11:												
Bakeoven--------	0-3	15-25	1.25-1.35	0.2-0.6	0.06-0.14	6.1-7.8	0-0	Low	0.10	1	8	1-3
	3-6	18-33	1.30-1.40	0.2-0.6	0.05-0.14	6.6-7.8	0-0	Low	0.10			
	6	---	---	---	---	---	---	---	---			
Watama----------	0-11	18-27	1.10-1.25	0.6-2.0	0.18-0.21	6.6-7.3	0-0	Moderate	0.32	2	6	3-5
	11-34	18-27	1.10-1.30	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Moderate	0.37			
	34-38	18-27	1.20-1.40	0.6-2.0	0.14-0.18	6.6-7.8	0-0	Moderate	0.32			
	38	---	---	---	---	---	---	---	---			
12:												
Boles----------	0-13	14-26	1.15-1.25	0.6-2.0	0.19-0.25	5.1-6.5	---	Low	0.37	5	6	4-9
	13-17	14-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-6.5	---	Low	0.55			
	17-45	40-52	1.45-1.65	0.06-0.2	0.10-0.18	6.1-7.3	---	Very high	0.32			
	45-70	36-50	1.45-1.65	0.06-0.2	0.10-0.18	6.6-7.8	0-2	Very high	0.32			
Joel----------	0-18	20-27	1.20-1.35	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	5	6	2-5
	18-24	20-27	1.25-1.40	0.6-2.0	0.18-0.24	5.6-7.3	0-0	Low	0.43			
	24-60	24-35	1.30-1.50	0.2-0.6	0.15-0.19	5.6-7.3	0-0	Moderate	0.49			
13:												
Bridgewater-----	0-16	10-18	1.25-1.45	2.0-6.0	0.04-0.07	6.1-7.3	<2	Low	0.05	3	3	2-4
	16-34	10-22	1.45-1.55	0.6-6.0	0.04-0.07	6.6-7.8	<2	Low	0.05			
	34-60	0-5	1.50-1.65	>20	0.02-0.05	6.6-7.8	<2	Low	0.05			
Joseph----------	0-10	0-8	1.55-1.70	6.0-20	0.01-0.05	6.6-7.3	0-0	Low	0.05	5	8	.5-1
	10-60	0-5	1.55-1.75	>20	0.01-0.05	6.6-7.3	0-0	Low	0.05			
14, 15----------	0-16	18-24	1.20-1.40	0.6-2.0	0.18-0.20	5.6-7.3	0-0	Moderate	0.43	5	6	2-4
Broadax	16-33	24-35	1.20-1.40	0.2-0.6	0.12-0.20	7.4-7.8	0-0	Moderate	0.43			
	33-37	18-25	1.20-1.40	0.6-2.0	0.12-0.20	7.4-8.4	0-0	Moderate	0.49			
	37-65	15-25	1.20-1.40	0.6-2.0	0.16-0.20	7.9-9.0	0-2	Moderate	0.49			
16, 17:												
Broadax----------	0-16	18-24	1.20-1.40	0.6-2.0	0.18-0.20	5.6-7.3	0-0	Moderate	0.43	5	6	2-4
	16-33	24-35	1.20-1.40	0.2-0.6	0.12-0.20	7.4-7.8	0-0	Moderate	0.43			
	33-37	18-25	1.20-1.40	0.6-2.0	0.12-0.20	7.4-8.4	0-0	Moderate	0.49			
	37-65	15-25	1.20-1.40	0.6-2.0	0.16-0.20	7.9-9.0	0-2	Moderate	0.49			
Hatwai----------	0-13	14-22	1.20-1.30	0.6-2.0	0.18-0.20	6.1-7.3	---	Low	0.43	2	5	2-3
	13-21	10-18	1.20-1.30	0.6-2.0	0.18-0.20	6.6-7.8	---	Low	0.55			
	21-36	22-34	1.25-1.40	0.06-0.2	0.10-0.16	7.9-9.0	0-2	Moderate	0.49			
	36-66	16-30	1.20-1.40	0.2-0.6	0.10-0.16	7.9-9.6	2-4	Low	0.55			
18:												
Caldwell--------	0-26	18-27	1.10-1.30	0.6-2.0	0.19-0.21	5.6-7.3	<2	Moderate	0.37	5	6	4-8
	26-60	20-35	1.25-1.40	0.2-0.6	0.19-0.21	6.1-7.3	<2	Moderate	0.37			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
18:												
Latah	0-19	20-27	1.10-1.25	0.6-2.0	0.19-0.21	6.6-7.8	0-0	Low	0.32	3	6	3-5
	19-30	15-25	1.15-1.30	0.6-2.0	0.18-0.20	6.6-7.8	0-0	Low	0.43			
	30-60	35-60	1.20-1.35	0.00-0.06	0.14-0.16	6.6-7.8	0-0	High	0.32			
19:												
Calouse	0-10	18-22	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	0-0	Moderate	0.43	5	5	2-3
	10-23	18-23	1.20-1.30	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Moderate	0.49			
	23-32	18-23	1.20-1.30	0.6-2.0	0.18-0.21	6.6-8.4	0-0	Moderate	0.49			
	32-68	15-22	1.25-1.45	0.6-2.0	0.14-0.20	7.9-9.0	0-2	Moderate	0.55			
Almota	0-17	18-22	1.15-1.35	0.6-2.0	0.17-0.22	6.6-7.8	0-0	Low	0.43	2	5	2-4
	17-24	18-22	1.25-1.45	0.6-2.0	0.15-0.20	6.6-7.8	0-0	Low	0.37			
	24-35	18-22	1.25-1.45	0.6-2.0	0.14-0.16	7.9-8.4	0-2	Low	0.32			
	35-39	18-22	1.25-1.45	0.6-2.0	0.10-0.12	7.9-8.4	0-2	Low	0.20			
	39	---	---	---	---	---	---	---	---			
20:												
Calouse	0-10	18-22	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	0-0	Moderate	0.43	5	5	2-3
	10-23	18-23	1.20-1.30	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Moderate	0.49			
	23-32	18-23	1.20-1.30	0.6-2.0	0.18-0.21	6.6-8.4	0-0	Moderate	0.49			
	32-68	15-22	1.25-1.45	0.6-2.0	0.14-0.20	7.9-9.0	0-2	Moderate	0.55			
Endicott	0-15	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.1-7.8	<2	Low	0.43	2	5	2-3
	15-22	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.6-8.4	<2	Low	0.49			
	22-29	14-18	1.20-1.40	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low	0.49			
	29-38	10-16	1.20-1.40	0.6-2.0	0.10-0.15	7.9-9.0	<2	Low	0.24			
	38-60	---	---	---	---	---	---	---	---			
Bryden	0-10	12-16	1.20-1.40	0.6-2.0	0.15-0.17	6.1-7.8	<2	Low	0.49	2	5	2-3
	10-19	18-30	1.20-1.40	0.2-0.6	0.15-0.17	6.6-8.4	2-4	Moderate	0.43			
	19-31	18-26	1.20-1.40	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	0.49			
	31-37	12-18	1.20-1.40	0.6-2.0	0.10-0.15	>8.4	2-4	Low	0.20			
	37-60	---	---	---	---	---	---	---	---			
21, 22	0-8	10-20	1.15-1.30	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Low	0.37	3	5	2-4
Carlinton	8-22	18-22	1.25-1.40	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.49			
	22-28	18-26	1.25-1.45	0.6-2.0	0.18-0.22	5.6-7.3	0-0	Low	0.49			
	28-50	28-34	1.60-1.70	0.00-0.06	0.04-0.08	5.6-7.3	0-0	Moderate	0.49			
	50-61	28-34	1.50-1.60	0.06-0.2	0.06-0.10	6.1-7.8	0-0	Moderate	0.49			
23:												
Carlinton	0-5	10-20	1.15-1.30	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Low	0.37	3	5	2-4
	5-32	18-22	1.25-1.40	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.49			
	32-36	18-26	1.25-1.45	0.6-2.0	0.18-0.22	5.6-7.3	0-0	Low	0.49			
	36-55	28-34	1.60-1.70	0.00-0.06	0.04-0.08	5.6-7.3	0-0	Moderate	0.49			
	55-60	28-34	1.50-1.60	0.06-0.2	0.06-0.10	6.1-7.8	0-0	Moderate	0.49			
Talmaks	0-3	16-22	0.85-1.10	0.6-2.0	0.19-0.22	5.6-6.5	---	Low	0.43	5	5	3-6
	3-16	18-24	0.95-1.20	0.6-2.0	0.18-0.22	5.6-6.5	---	Low	0.49			
	16-47	24-36	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.43			
	47-70	28-40	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.49			
24:												
Cavendish	0-8	18-25	1.15-1.35	0.6-2.0	0.19-0.21	5.6-7.3	0-0	Low	0.37	4	6	1-3
	8-30	25-33	1.30-1.45	0.2-0.6	0.19-0.21	5.1-7.3	0-0	Moderate	0.24			
	30-43	30-34	1.25-1.40	0.2-0.6	0.13-0.19	5.1-7.3	0-0	Moderate	0.17			
	43	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm		K	T		Pct
24:												
Taney	0-14	20-27	1.15-1.45	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Moderate	0.49	3	6	2-5
	14-23	18-27	1.25-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Moderate	0.49			
	23-29	10-20	1.40-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.55			
	29-36	23-35	1.60-1.75	0.00-0.06	0.04-0.08	5.6-6.5	0-0	Moderate	0.43			
	36-63	28-42	1.45-1.65	0.2-0.6	0.06-0.10	5.6-7.3	0-0	Moderate	0.43			
25, 26, 27	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
Chard	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			
28:												
Chard	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			
Chard, moist	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			
29:												
Chard	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			
Tammany	0-4	14-22	1.15-1.30	0.6-2.0	0.16-0.20	6.6-7.8	---	Low	0.32	5	5	2-3
	4-10	14-22	1.25-1.40	0.6-2.0	0.07-0.10	6.6-7.8	---	Low	0.17			
	10-17	14-22	1.25-1.40	0.6-2.0	0.07-0.10	6.6-7.8	---	Low	0.15			
	17-29	8-16	1.35-1.50	2.0-6.0	0.05-0.09	7.9-8.4	0-2	Low	0.05			
	29-60	2-6	1.50-1.60	>20	0.02-0.04	7.9-8.4	0-2	Low	0.02			
30:												
Chard	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			
Urban land.												
31	0-2	14-20	0.90-1.10	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.43	5	6	2-5
Cramont	2-14	14-24	1.15-1.40	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Low	0.55			
	14-44	32-42	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
	44-65	32-40	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
32:												
Cramont	0-2	14-20	0.90-1.10	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.43	5	6	2-5
	2-14	14-24	1.15-1.40	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Low	0.55			
	14-44	32-42	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
	44-65	32-40	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
Culdesac	0-3	---	0.75-0.95	0.6-2.0	0.20-0.24	5.6-7.3	0-0	Low	0.20	5	5	4-6
	3-18	---	0.75-0.95	0.6-2.0	0.20-0.24	5.6-6.5	0-0	Low	0.20			
	18-54	28-38	1.30-1.50	0.2-0.6	0.10-0.18	5.6-7.3	0-0	Moderate	0.37			
	54-60	28-38	1.30-1.50	0.2-0.6	0.06-0.12	5.6-7.3	0-0	Moderate	0.28			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
33:												
Cramont	0-2	14-20	0.90-1.10	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.43	5	6	2-5
	2-14	14-24	1.15-1.40	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Low	0.55			
	14-44	32-42	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
	44-65	32-40	1.35-1.50	0.06-0.2	0.10-0.18	5.1-6.5	0-0	Moderate	0.43			
Seddow	0-4	14-24	0.75-1.10	0.6-2.0	0.19-0.24	5.6-6.5	---	Low	0.43	3	5	2-6
	4-13	14-24	0.90-1.20	0.6-2.0	0.17-0.24	5.1-6.0	---	Low	0.43			
	13-29	24-38	1.25-1.45	0.2-0.6	0.12-0.18	5.1-6.0	---	Moderate	0.20			
	29-48	35-40	1.25-1.40	0.2-0.6	0.07-0.10	5.6-6.5	---	Moderate	0.05			
	48	---	---	---	---	---	---	---	---			
34 Crowers	0-10	12-16	1.00-1.15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low	0.28	5	5	4-6
	10-27	12-16	1.05-1.20	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.32			
	27-31	16-22	1.20-1.40	0.6-2.0	0.14-0.20	6.6-7.8	<2	Moderate	0.32			
	31-41	16-24	1.25-1.45	0.6-2.0	0.09-0.13	7.9-8.4	<2	Moderate	0.15			
	41-62	16-24	1.25-1.45	0.6-2.0	0.13-0.18	7.9-8.4	<2	Moderate	0.28			
35 Driscoll	0-13	18-26	1.30-1.50	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.32	5	5	3-5
	13-31	12-26	1.45-1.55	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.55			
	31-46	38-55	1.50-1.55	0.06-0.2	0.15-0.20	5.6-7.3	0-0	High	0.37			
	46-60	32-38	1.40-1.50	0.06-0.2	0.19-0.21	6.1-7.3	0-0	High	0.43			
36:												
Driscoll	0-13	18-26	1.30-1.50	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.32	5	5	3-5
	13-31	12-26	1.45-1.55	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.55			
	31-46	38-55	1.50-1.55	0.06-0.2	0.15-0.20	5.6-7.3	0-0	High	0.37			
	46-60	32-38	1.40-1.50	0.06-0.2	0.19-0.21	6.1-7.3	0-0	High	0.43			
Larkin	0-19	15-24	1.15-1.30	0.6-2.0	0.19-0.21	5.6-7.3	0-0	Low	0.32	5	6	3-5
	19-61	24-35	1.20-1.40	0.2-0.6	0.19-0.21	5.6-7.3	0-0	Moderate	0.43			
37, 38:												
Endicott	0-12	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.1-7.8	<2	Low	0.43	2	5	2-3
	12-20	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.6-8.4	<2	Low	0.49			
	20-30	14-18	1.20-1.40	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low	0.49			
	30-36	10-16	1.20-1.40	0.6-2.0	0.10-0.15	7.9-9.0	<2	Low	0.24			
	36-60	---	---	---	---	---	---	---	---			
Bryden	0-10	12-16	1.20-1.40	0.6-2.0	0.15-0.17	6.1-7.8	<2	Low	0.49	2	5	2-3
	10-19	18-30	1.20-1.40	0.2-0.6	0.15-0.17	6.6-8.4	2-4	Moderate	0.43			
	19-31	18-26	1.20-1.40	0.2-0.6	0.15-0.17	7.9-9.0	2-4	Moderate	0.49			
	31-37	12-18	1.20-1.40	0.6-2.0	0.10-0.15	>8.4	2-4	Low	0.20			
	37-60	---	---	---	---	---	---	---	---			
39:												
Endicott	0-12	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.1-7.8	<2	Low	0.43	2	5	2-3
	12-20	14-18	1.20-1.40	0.6-2.0	0.15-0.17	6.6-8.4	<2	Low	0.49			
	20-30	14-18	1.20-1.40	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low	0.49			
	30-36	10-16	1.20-1.40	0.6-2.0	0.10-0.15	7.9-9.0	<2	Low	0.24			
	36-60	---	---	---	---	---	---	---	---			
Oliphant	0-16	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.43	5	5	2-4
	16-24	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.49			
	24-29	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.55			
	29-62	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.9-9.0	<2	Low	0.55			
40 Entic Haploxerolls	0-8	10-22	1.10-1.25	0.6-2.0	0.14-0.18	7.9-8.4	0-2	Low	0.37	1	5	1-3
	8-17	10-22	1.15-1.25	0.6-2.0	0.08-0.18	7.9-8.4	0-2	Low	0.43			
	17-28	---	---	---	---	---	---	---	---			
	28	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
41:												
Gwin	0-6	20-27	1.20-1.35	0.6-2.0	0.10-0.15	6.1-7.3	0-0	Moderate	0.15	1	8	2-3
	6-12	24-35	1.20-1.40	0.2-0.6	0.08-0.12	6.1-7.3	0-0	Moderate	0.10			
	12	---	---	---	---	---	---	---	---			
Vollmer	0-12	18-24	1.20-1.30	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low	0.37	2	5	2-5
	12-28	24-35	1.25-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Low	0.43			
	28-36	24-35	1.25-1.35	0.2-0.6	0.15-0.19	6.1-7.3	<2	Low	0.32			
	36	---	---	---	---	---	---	---	---			
42	0-14	28-40	1.15-1.25	0.2-0.6	0.18-0.21	6.6-7.8	0-0	Moderate	0.28	2	4	1-3
Haploxerolls	14-23	24-40	1.20-1.30	0.2-2.0	0.14-0.21	7.4-8.4	0-2	Moderate	0.20			
	23-60	24-40	1.20-1.40	0.2-2.0	0.12-0.21	7.9-9.6	2-4	Moderate	0.28			
43	0-11	18-25	1.10-1.20	0.6-2.0	0.12-0.14	6.1-7.3	<2	Moderate	0.20	2	6	2-5
Hooverton	11-17	20-27	1.15-1.30	0.6-2.0	0.10-0.12	6.1-7.3	<2	Moderate	0.15			
	17-35	24-34	1.35-1.45	0.2-0.6	0.02-0.10	6.1-7.3	<2	Moderate	0.05			
	35	---	---	---	---	---	---	---	---			
44	0-5	27-35	1.15-1.35	0.2-0.6	0.10-0.14	6.6-7.3	0-0	Moderate	0.20	2	8	2-4
Immig	5-10	27-36	1.15-1.35	0.2-0.6	0.10-0.17	6.6-7.3	0-0	Moderate	0.28			
	10-29	40-50	1.30-1.50	0.06-0.2	0.02-0.05	6.6-7.3	0-0	High	0.17			
	29	---	---	---	---	---	---	---	---			
45, 46	0-7	22-26	1.10-1.30	0.6-2.0	0.19-0.23	6.1-7.3	<2	Low	0.32	5	6	4-6
Jacket	7-27	27-35	1.20-1.40	0.2-0.6	0.16-0.21	6.1-7.3	<2	Moderate	0.49			
	27-56	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	<2	High	0.43			
	56-63	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	<2	High	0.37			
47:												
Jacket	0-7	22-26	1.10-1.30	0.6-2.0	0.19-0.23	6.1-7.3	0-0	Low	0.32	5	6	4-6
	7-27	27-35	1.20-1.40	0.2-0.6	0.16-0.21	6.1-7.3	0-0	High	0.49			
	27-56	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	0-0	High	0.43			
	56-63	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	0-0	High	0.37			
Larkin	0-19	15-24	1.15-1.30	0.6-2.0	0.19-0.21	5.6-7.3	0-0	Low	0.32	5	6	3-5
	19-61	24-35	1.20-1.40	0.2-0.6	0.19-0.21	5.6-7.3	0-0	Moderate	0.43			
48, 49	0-18	20-27	1.20-1.35	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	5	6	2-5
Joel	18-24	20-27	1.25-1.40	0.6-2.0	0.18-0.24	5.6-7.3	0-0	Low	0.43			
	24-60	24-35	1.30-1.50	0.2-0.6	0.15-0.19	5.6-7.3	0-0	Moderate	0.49			
50, 51:												
Joel	0-18	20-27	1.20-1.35	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	5	6	2-5
	18-25	20-27	1.25-1.40	0.6-2.0	0.18-0.24	5.6-7.3	0-0	Low	0.43			
	25-66	24-35	1.30-1.50	0.2-0.6	0.15-0.19	5.6-7.3	0-0	Moderate	0.49			
Setters	0-12	20-26	1.15-1.45	0.6-2.0	0.18-0.22	5.1-6.5	---	Moderate	0.43	2	6	2-5
	12-17	15-26	1.25-1.55	0.6-2.0	0.18-0.22	6.1-7.3	---	Moderate	0.55			
	17-19	15-20	1.40-1.55	0.6-2.0	0.18-0.22	5.6-6.5	---	Low	0.55			
	19-61	35-50	1.30-1.40	0.06-0.2	0.15-0.20	5.6-7.3	---	Very high	0.37			
52	0-10	15-25	1.15-1.25	0.6-2.0	0.14-0.18	5.6-7.3	0-0	Low	0.32	5	5	2-4
Johnson	10-63	20-35	1.40-1.50	0.2-0.6	0.12-0.20	5.6-7.3	0-0	Moderate	0.28			
53:												
Johnson	0-10	15-25	1.15-1.25	0.6-2.0	0.14-0.18	5.6-7.3	0-0	Low	0.32	5	5	2-4
	10-63	20-35	1.40-1.50	0.2-0.6	0.12-0.20	5.6-7.3	0-0	Moderate	0.28			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
53:												
Dragnot	0-4	14-20	1.15-1.35	0.6-2.0	0.14-0.18	6.1-7.3	0-0	Low	0.24	2	5	2-4
	4-11	14-20	1.15-1.35	0.6-2.0	0.14-0.18	6.1-7.3	0-0	Low	0.24			
	11-18	18-24	1.20-1.40	0.6-2.0	0.14-0.18	6.1-7.3	0-0	Moderate	0.28			
	18-31	5-15	1.30-1.50	2.0-6.0	0.06-0.10	6.1-7.3	0-0	Low	0.10			
	31	---	---	---	---	---	---	---	---			
Dragnot, dry	0-4	14-20	1.15-1.35	0.6-2.0	0.14-0.18	6.1-7.3	---	Low	0.24	2	5	2-4
	4-11	14-20	1.15-1.35	0.6-2.0	0.14-0.18	6.1-7.3	---	Low	0.24			
	11-18	18-24	1.20-1.40	0.6-2.0	0.14-0.18	6.1-7.3	---	Moderate	0.28			
	18-31	5-15	1.30-1.50	2.0-6.0	0.06-0.10	6.1-7.3	---	Low	0.10			
	31	---	---	---	---	---	---	---	---			
54:												
Johnson	0-13	15-25	1.15-1.25	0.6-2.0	0.14-0.18	5.6-7.3	0-0	Low	0.32	5	5	2-4
	13-60	20-35	1.40-1.50	0.2-0.6	0.12-0.20	5.6-7.3	0-0	Moderate	0.28			
Kruse	0-16	16-24	1.25-1.35	0.6-2.0	0.16-0.18	5.6-6.5	<2	Low	0.49	5	5	1-2
	16-49	24-34	1.40-1.50	0.2-0.6	0.15-0.19	6.1-7.3	<2	Moderate	0.43			
	49-65	14-20	1.40-1.50	2.0-6.0	0.10-0.14	6.6-7.3	<2	Low	0.20			
55:												
Johnson	0-13	15-25	1.15-1.25	0.6-2.0	0.14-0.18	5.6-7.3	0-0	Low	0.32	5	5	2-4
	13-60	20-35	1.40-1.50	0.2-0.6	0.12-0.20	5.6-7.3	0-0	Moderate	0.28			
Labuck	0-4	8-16	1.10-1.30	2.0-6.0	0.08-0.12	6.1-7.3	0-0	Low	0.20	2	3	.5-2
	4-15	8-16	1.25-1.45	2.0-6.0	0.08-0.12	5.6-7.3	0-0	Low	0.20			
	15-26	10-18	1.40-1.60	2.0-6.0	0.07-0.10	5.6-6.5	0-0	Low	0.15			
	26	---	---	---	---	---	---	---	---			
56:												
Joseph	0-10	0-8	1.55-1.70	6.0-20	0.01-0.05	6.6-7.3	0-0	Low	0.05	5	8	.5-1
	10-60	0-5	1.55-1.75	>20	0.01-0.05	6.6-7.3	0-0	Low	0.05			
Tombeall	0-7	15-20	1.15-1.25	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Low	0.32	5	5	2-5
	7-28	15-20	1.20-1.40	0.6-2.0	0.11-0.13	6.6-7.8	0-0	Low	0.28			
	28-35	5-15	1.25-1.45	2.0-6.0	0.06-0.10	6.6-7.8	0-0	Low	0.05			
	35-60	5-15	1.35-1.55	2.0-6.0	0.02-0.05	6.6-7.8	0-0	Low	0.02			
57:												
Kettenbach	0-4	20-27	1.10-1.30	0.6-2.0	0.14-0.16	6.1-7.3	0-0	Moderate	0.24	2	8	2-4
	4-10	20-30	1.15-1.35	0.2-0.6	0.10-0.12	6.1-7.3	0-0	Moderate	0.28			
	10-25	24-35	1.25-1.45	0.2-0.6	0.06-0.12	6.1-7.3	0-0	Moderate	0.10			
	25	---	---	---	---	---	---	---	---			
Kettenbach, moist	0-5	20-27	1.10-1.30	0.6-2.0	0.14-0.16	6.1-7.3	0-0	Moderate	0.24	2	8	2-4
	5-15	20-30	1.15-1.35	0.2-0.6	0.10-0.12	6.1-7.3	0-0	Moderate	0.28			
	15-30	24-35	1.25-1.45	0.2-0.6	0.06-0.12	6.1-7.3	0-0	Moderate	0.10			
	30	---	---	---	---	---	---	---	---			
Gwin	0-6	20-27	1.20-1.35	0.6-2.0	0.10-0.15	6.1-7.3	0-0	Moderate	0.15	1	8	2-3
	6-12	24-35	1.20-1.40	0.2-0.6	0.08-0.12	6.1-7.3	0-0	Moderate	0.10			
	12	---	---	---	---	---	---	---	---			
58:												
Kettenbach	0-4	20-27	1.10-1.30	0.6-2.0	0.14-0.16	6.1-7.3	0-0	Moderate	0.24	2	8	2-4
	4-10	20-30	1.15-1.35	0.2-0.6	0.10-0.12	6.1-7.3	0-0	Moderate	0.28			
	10-25	24-35	1.25-1.45	0.2-0.6	0.06-0.12	6.1-7.3	0-0	Moderate	0.10			
	25	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
58:												
Keuterville	0-13	18-25	1.20-1.35	0.6-2.0	0.12-0.14	6.1-7.3	0-0	Low	0.24	5	8	4-6
	13-49	26-35	1.40-1.55	0.2-0.6	0.06-0.10	6.1-7.3	0-0	Low	0.10			
	49-61	20-30	1.40-1.55	0.2-0.6	0.06-0.08	6.1-7.3	0-0	Low	0.10			
59:												
Kettenbach	0-4	20-27	1.10-1.30	0.6-2.0	0.14-0.16	6.1-7.3	0-0	Moderate	0.24	2	8	2-4
	4-10	20-30	1.15-1.35	0.2-0.6	0.10-0.12	6.1-7.3	0-0	Moderate	0.28			
	10-25	24-35	1.25-1.45	0.2-0.6	0.06-0.12	6.1-7.3	0-0	Moderate	0.10			
	25	---	---	---	---	---	---	---	---			
Rock outcrop.												
60, 61	0-13	18-25	1.20-1.35	0.6-2.0	0.12-0.14	6.1-7.3	0-0	Low	0.24	5	8	4-6
Keuterville	13-49	26-35	1.40-1.55	0.2-0.6	0.06-0.10	6.1-7.3	0-0	Low	0.10			
	49-61	20-30	1.40-1.55	0.2-0.6	0.06-0.08	6.1-7.3	0-0	Low	0.10			
62:												
Keuterville	0-13	18-25	1.20-1.35	0.6-2.0	0.12-0.14	6.1-7.3	0-0	Low	0.24	5	8	4-6
	13-49	26-35	1.40-1.55	0.2-0.6	0.06-0.10	6.1-7.3	0-0	Low	0.10			
	49-61	20-30	1.40-1.55	0.2-0.6	0.06-0.08	6.1-7.3	0-0	Low	0.10			
Rock outcrop.												
63, 64	0-7	18-26	1.15-1.30	0.6-2.0	0.18-0.22	6.6-7.3	0-0	Moderate	0.37	5	7	2-4
Klickson	7-15	18-26	1.15-1.30	0.6-2.0	0.10-0.18	6.1-7.3	0-0	Moderate	0.20			
	15-36	24-36	1.25-1.45	0.2-0.6	0.07-0.14	6.1-7.3	0-0	Moderate	0.15			
	36-61	24-36	1.25-1.45	0.2-0.6	0.05-0.12	6.1-7.3	0-0	Moderate	0.10			
65:												
Klickson	0-7	18-26	1.15-1.30	0.6-2.0	0.18-0.22	6.6-7.3	0-0	Moderate	0.37	5	7	2-4
	7-15	18-26	1.15-1.30	0.6-2.0	0.10-0.18	6.1-7.3	0-0	Moderate	0.20			
	15-36	24-36	1.25-1.45	0.2-0.6	0.07-0.14	6.1-7.3	0-0	Moderate	0.15			
	36-61	24-36	1.25-1.45	0.2-0.6	0.05-0.12	6.1-7.3	0-0	Moderate	0.10			
Agatha	0-15	12-24	1.40-1.45	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	3	6	1-3
	15-23	18-30	1.45-1.55	0.2-2.0	0.13-0.17	5.6-6.5	0-0	Low	0.20			
	23-47	24-35	1.45-1.50	0.2-0.6	0.04-0.09	5.6-6.5	0-0	Low	0.10			
	47	---	---	---	---	---	---	---	---			
66:												
Klickson	0-7	18-26	1.15-1.30	0.6-2.0	0.18-0.22	6.6-7.3	0-0	Moderate	0.37	5	7	2-4
	7-15	18-26	1.15-1.30	0.6-2.0	0.10-0.18	6.1-7.3	0-0	Moderate	0.20			
	15-36	24-36	1.25-1.45	0.2-0.6	0.07-0.14	6.1-7.3	0-0	Moderate	0.15			
	36-61	24-36	1.25-1.45	0.2-0.6	0.05-0.12	6.1-7.3	0-0	Moderate	0.10			
Hooverton	0-11	18-25	1.10-1.20	0.6-2.0	0.12-0.14	6.1-7.3	<2	Moderate	0.20	2	6	2-5
	11-17	20-27	1.15-1.30	0.6-2.0	0.10-0.12	6.1-7.3	<2	Moderate	0.15			
	17-35	24-34	1.35-1.45	0.2-0.6	0.02-0.10	6.1-7.3	<2	Moderate	0.05			
	35	---	---	---	---	---	---	---	---			
67:												
Klickson	0-7	18-26	1.15-1.30	0.6-2.0	0.18-0.22	6.6-7.3	0-0	Moderate	0.37	5	7	2-4
	7-15	18-26	1.15-1.30	0.6-2.0	0.10-0.18	6.1-7.3	0-0	Moderate	0.20			
	15-36	24-36	1.25-1.45	0.2-0.6	0.07-0.14	6.1-7.3	0-0	Moderate	0.15			
	36-61	24-36	1.25-1.45	0.2-0.6	0.05-0.12	6.1-7.3	0-0	Moderate	0.10			
Rock outcrop.												

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
68:												
Klickson	0-7	18-26	1.15-1.30	0.6-2.0	0.18-0.22	6.6-7.3	0-0	Moderate	0.37	5	7	2-4
	7-15	18-26	1.15-1.30	0.6-2.0	0.10-0.18	6.1-7.3	0-0	Moderate	0.20			
	15-36	24-36	1.25-1.45	0.2-0.6	0.07-0.14	6.1-7.3	0-0	Moderate	0.15			
	36-61	24-36	1.25-1.45	0.2-0.6	0.05-0.12	6.1-7.3	0-0	Moderate	0.10			
Uptmor	0-6	20-26	1.15-1.35	0.6-2.0	0.18-0.21	5.6-6.5	0-0	Moderate	0.43	3	6	2-4
	6-15	27-32	1.20-1.40	0.2-0.6	0.17-0.21	5.6-6.5	0-0	Moderate	0.28			
	15-26	35-60	1.40-1.60	0.06-0.2	0.12-0.16	5.6-6.5	0-0	Very high	0.24			
	26-47	35-60	1.40-1.60	0.06-0.2	0.09-0.14	5.6-6.5	0-0	Very high	0.17			
	47	---	---	---	---	---	---	---	---			
69	0-16	16-24	1.25-1.35	0.6-2.0	0.16-0.18	5.6-6.5	<2	Low	0.49	5	5	1-2
Kruse	16-49	24-34	1.40-1.50	0.2-0.6	0.15-0.19	6.1-7.3	<2	Moderate	0.43			
	49-65	14-20	1.40-1.50	2.0-6.0	0.10-0.14	6.6-7.3	<2	Low	0.20			
70:												
Lapwai	0-9	10-20	1.25-1.35	0.6-2.0	0.16-0.19	6.6-7.8	<2	Low	0.32	5	5	3-6
	9-28	10-20	1.30-1.40	0.6-2.0	0.16-0.19	6.6-7.8	<2	Low	0.32			
	28-35	10-20	1.30-1.45	0.6-2.0	0.14-0.19	6.6-7.8	<2	Low	0.43			
	35-60	5-15	1.35-1.55	2.0-6.0	0.05-0.08	7.4-8.4	0-2	Low	0.10			
Bridgewater	0-16	10-18	1.25-1.45	2.0-6.0	0.04-0.07	6.1-7.3	<2	Low	0.05	3	3	2-4
	16-34	10-22	1.45-1.55	0.6-6.0	0.04-0.07	6.6-7.8	<2	Low	0.05			
	34-60	0-5	1.50-1.65	>20	0.02-0.05	6.6-7.8	<2	Low	0.05			
71	0-4	18-26	1.20-1.40	0.6-2.0	0.17-0.20	6.1-6.5	0-0	Moderate	0.32	2	6	4-6
Larabee	4-10	18-24	1.25-1.45	0.6-2.0	0.14-0.18	5.6-6.0	0-0	Moderate	0.24			
	10-20	24-32	1.30-1.50	0.2-0.6	0.10-0.15	5.6-6.0	0-0	Moderate	0.15			
	20-29	30-40	1.30-1.50	0.2-0.6	0.04-0.12	5.6-6.0	0-0	High	0.05			
	29	---	---	---	---	---	---	---	---			
72:												
Larabee	0-4	18-26	1.20-1.40	0.6-2.0	0.17-0.20	6.1-6.5	0-0	Moderate	0.32	2	6	4-6
	4-10	18-24	1.25-1.45	0.6-2.0	0.14-0.18	5.6-6.0	0-0	Moderate	0.24			
	10-20	24-32	1.30-1.50	0.2-0.6	0.10-0.15	5.6-6.0	0-0	Moderate	0.15			
	20-29	30-40	1.30-1.50	0.2-0.6	0.04-0.12	5.6-6.0	0-0	High	0.05			
	29	---	---	---	---	---	---	---	---			
Gwin	0-6	20-27	1.20-1.35	0.6-2.0	0.10-0.15	6.1-7.3	0-0	Moderate	0.15	1	8	2-3
	6-12	24-35	1.20-1.40	0.2-0.6	0.08-0.12	6.1-7.3	0-0	Moderate	0.10			
	12	---	---	---	---	---	---	---	---			
73:												
Larabee	0-4	18-26	1.20-1.40	0.6-2.0	0.17-0.20	6.1-6.5	0-0	Moderate	0.32	2	6	4-6
	4-10	18-24	1.25-1.45	0.6-2.0	0.14-0.18	5.6-6.0	0-0	Moderate	0.24			
	10-20	24-32	1.30-1.50	0.2-0.6	0.10-0.15	5.6-6.0	0-0	Moderate	0.15			
	20-29	30-40	1.30-1.50	0.2-0.6	0.04-0.12	5.6-6.0	0-0	High	0.05			
	29	---	---	---	---	---	---	---	---			
Zaza	0-4	10-18	1.15-1.35	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low	0.20	1	5	.5-4
	4-8	10-18	1.20-1.40	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low	0.15			
	8-14	10-18	1.20-1.40	0.6-2.0	0.08-0.14	5.6-6.5	<2	Low	0.10			
	14	---	---	---	---	---	---	---	---			
Seddow	0-4	14-24	0.75-1.10	0.6-2.0	0.19-0.24	5.6-6.5	---	Low	0.43	3	5	2-6
	4-13	14-24	0.90-1.20	0.6-2.0	0.17-0.24	5.1-6.0	---	Low	0.43			
	13-29	24-38	1.25-1.45	0.2-0.6	0.12-0.18	5.1-6.0	---	Moderate	0.20			
	29-48	35-40	1.25-1.40	0.2-0.6	0.07-0.10	5.6-6.5	---	Moderate	0.05			
	48	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
74:												
Larkin	0-19	15-24	1.15-1.30	0.6-2.0	0.19-0.21	5.6-7.3	0-0	Low	0.32	5	6	3-5
	19-61	24-35	1.20-1.40	0.2-0.6	0.19-0.21	5.6-7.3	0-0	Moderate	0.43			
Driscoll	0-13	18-26	1.30-1.50	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.32	5	5	3-5
	13-31	12-26	1.45-1.55	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.55			
	31-46	38-55	1.50-1.55	0.06-0.2	0.15-0.20	5.6-7.3	0-0	High	0.37			
	46-60	32-38	1.40-1.50	0.06-0.2	0.19-0.21	6.1-7.3	0-0	High	0.43			
75:												
Latahco	0-13	15-25	1.15-1.35	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Moderate	0.32	5	6	4-7
	13-22	15-25	1.15-1.35	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Moderate	0.37			
	22-35	8-16	1.30-1.40	0.6-2.0	0.16-0.18	6.1-7.3	0-0	Low	0.55			
	35-60	25-35	1.30-1.50	0.2-0.6	0.17-0.19	7.4-8.4	0-0	Moderate	0.49			
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
76:												
Lauby	0-17	20-26	1.20-1.30	0.2-2.0	0.19-0.24	5.6-6.5	---	Low	0.32	5	6	3-5
	17-24	20-30	1.30-1.40	0.6-2.0	0.19-0.21	6.1-7.3	---	Low	0.37			
	24-50	28-37	1.30-1.40	0.2-0.6	0.19-0.21	6.1-7.3	---	Moderate	0.32			
	50-60	10-18	1.30-1.50	0.6-2.0	0.13-0.17	6.1-7.3	---	Low	0.37			
Southwick	0-9	18-26	1.15-1.45	0.6-2.0	0.18-0.24	5.6-7.3	---	Moderate	0.32	5	5	2-5
	9-26	20-27	1.25-1.50	0.6-2.0	0.18-0.24	5.6-6.5	---	Moderate	0.49			
	26-32	12-20	1.35-1.55	0.6-2.0	0.18-0.24	5.6-7.3	---	Low	0.55			
	32-46	27-34	1.60-1.70	0.00-0.06	0.08-0.18	5.6-6.5	---	Moderate	0.43			
	46-64	30-38	1.45-1.65	0.2-0.6	0.10-0.20	5.6-7.3	---	Moderate	0.43			
77:												
Lickskillet	0-5	22-27	1.15-1.35	0.6-2.0	0.12-0.15	6.6-7.8	0-0	Moderate	0.17	1	8	1-2
	5-16	23-33	1.30-1.40	0.6-2.0	0.06-0.09	6.6-8.4	0-2	Moderate	0.10			
	16	---	---	---	---	---	---	---	---			
Alpowa	0-8	15-18	1.15-1.25	0.6-2.0	0.12-0.18	7.4-7.8	<2	Low	0.24	5	5	2-4
	8-13	15-18	1.25-1.45	0.6-2.0	0.08-0.12	7.4-7.8	<2	Low	0.20			
	13-60	15-18	1.25-1.45	0.6-2.0	0.07-0.12	7.4-9.0	<2	Low	0.17			
Rock outcrop.												
78	0-8	18-24	1.10-1.30	0.6-2.0	0.10-0.14	6.6-7.8	<2	Low	0.17	1	6	1-3
Limekiln	8-13	18-24	1.25-1.45	0.6-2.0	0.08-0.12	7.9-8.4	0-2	Low	0.17			
	13-16	18-24	1.25-1.45	0.6-2.0	0.06-0.12	7.9-9.0	0-2	Low	0.10			
	16	---	---	---	---	---	---	---	---			
79:												
Limekiln	0-8	18-24	1.10-1.30	0.6-2.0	0.10-0.14	6.6-7.8	<2	Low	0.17	1	6	1-3
	8-13	18-24	1.25-1.45	0.6-2.0	0.08-0.12	7.9-8.4	0-2	Low	0.17			
	13-16	18-24	1.25-1.45	0.6-2.0	0.06-0.12	7.9-9.0	0-2	Low	0.10			
	16	---	---	---	---	---	---	---	---			
Crowers	0-10	12-16	1.00-1.15	0.6-2.0	0.19-0.21	6.6-7.8	<2	Low	0.28	5	5	4-6
	10-27	12-16	1.05-1.20	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.32			
	27-31	16-22	1.20-1.40	0.6-2.0	0.14-0.20	6.6-7.8	<2	Moderate	0.32			
	31-41	16-24	1.25-1.45	0.6-2.0	0.09-0.13	7.9-8.4	<2	Moderate	0.15			
	41-62	16-24	1.25-1.45	0.6-2.0	0.13-0.18	7.9-8.4	<2	Moderate	0.28			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
80----------	0-19	15-25	1.15-1.25	0.6-2.0	0.17-0.20	6.6-7.8	---	Low-------	0.37	5	5	2-4
Linville	19-67	20-27	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	---	Low-------	0.32			
81:												
Linville---------	0-19	15-25	1.15-1.25	0.6-2.0	0.17-0.20	6.6-7.8	---	Low-------	0.37	5	5	2-4
	19-67	20-27	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	---	Low-------	0.32			
Kettenbach------	0-4	20-27	1.10-1.30	0.6-2.0	0.14-0.16	6.1-7.3	0-0	Moderate	0.24	2	8	2-4
	4-10	20-30	1.15-1.35	0.2-0.6	0.10-0.12	6.1-7.3	0-0	Moderate	0.28			
	10-25	24-35	1.25-1.45	0.2-0.6	0.06-0.12	6.1-7.3	0-0	Moderate	0.10			
	25	---	---	---	---	---	---	----------	----			
82:												
Linville---------	0-19	15-25	1.15-1.25	0.6-2.0	0.17-0.20	6.6-7.8	---	Low-------	0.37	5	5	2-4
	19-67	20-27	1.20-1.40	0.6-2.0	0.14-0.17	7.4-8.4	---	Low-------	0.32			
Waha------------	0-13	20-25	1.15-1.25	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low-------	0.43	2	6	2-3
	13-29	24-35	1.20-1.30	0.2-0.6	0.17-0.19	6.6-7.3	0-0	Moderate	0.43			
	29-34	27-38	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	0-0	Moderate	0.20			
	34	---	---	---	---	---	---	----------	----			
83:												
Mallory---------	0-7	20-27	1.15-1.35	0.6-2.0	0.09-0.13	6.1-7.3	<2	Moderate	0.15	2	8	4-5
	7-15	28-40	1.20-1.40	0.2-0.6	0.09-0.13	6.1-7.3	<2	High------	0.10			
	15-34	36-45	1.20-1.40	0.06-0.2	0.05-0.10	6.1-7.3	<2	High------	0.05			
	34	---	---	---	---	---	---	----------	----			
Jacket----------	0-7	22-26	1.10-1.30	0.6-2.0	0.19-0.23	6.1-7.3	<2	Low-------	0.32	5	6	4-6
	7-27	27-35	1.20-1.40	0.2-0.6	0.16-0.21	6.1-7.3	<2	Moderate	0.49			
	27-56	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	<2	High------	0.43			
	56-63	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	<2	High------	0.37			
84:												
Maloney---------	0-5	16-24	0.95-1.15	0.6-2.0	0.13-0.18	6.1-6.5	0-0	Low-------	0.24	2	5	3-6
	5-25	18-24	1.05-1.25	0.6-2.0	0.13-0.18	5.6-6.5	0-0	Low-------	0.28			
	25	---	---	---	---	---	---	----------	----			
Zaza------------	0-4	10-18	1.15-1.35	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low-------	0.20	1	5	.5-4
	4-8	10-18	1.20-1.40	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low-------	0.15			
	8-14	10-18	1.20-1.40	0.6-2.0	0.08-0.14	5.6-6.5	<2	Low-------	0.10			
	14	---	---	---	---	---	---	----------	----			
85:												
Meland----------	0-16	18-27	1.30-1.50	0.6-2.0	0.19-0.21	5.6-6.5	0-0	Low-------	0.37	2	5	4-6
	16-35	27-35	1.40-1.60	0.2-0.6	0.18-0.20	5.6-6.5	0-0	Moderate	0.24			
	35	---	---	---	---	---	---	----------	----			
Jacket----------	0-7	22-26	1.10-1.30	0.6-2.0	0.19-0.23	6.1-7.3	0-0	Low-------	0.32	5	6	4-6
	7-27	27-35	1.20-1.40	0.2-0.6	0.16-0.21	6.1-7.3	0-0	High------	0.49			
	27-56	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	0-0	High------	0.43			
	56-63	35-50	1.30-1.50	0.06-0.2	0.13-0.16	6.6-7.8	0-0	High------	0.37			
86:												
Meland----------	0-16	18-27	1.30-1.50	0.6-2.0	0.19-0.21	5.6-6.5	0-0	Low-------	0.37	2	5	4-6
	16-35	27-35	1.40-1.60	0.2-0.6	0.18-0.20	5.6-6.5	0-0	Moderate	0.24			
	35	---	---	---	---	---	---	----------	----			
Keuterville-----	0-13	18-25	1.20-1.35	0.6-2.0	0.12-0.14	6.1-7.3	0-0	Low-------	0.24	5	8	4-6
	13-49	26-35	1.40-1.55	0.2-0.6	0.06-0.10	6.1-7.3	0-0	Low-------	0.10			
	49-61	20-30	1.40-1.55	0.2-0.6	0.06-0.08	6.1-7.3	0-0	Low-------	0.10			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
87:												
Mohler	0-11	27-30	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	0-0	Low	0.32	5	6	4-7
	11-23	20-27	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43			
	23-29	24-34	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	0-0	Moderate	0.49			
	29-68	28-35	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	0-0	Moderate	0.43			
Nez Perce	0-11	27-32	1.10-1.25	0.6-2.0	0.19-0.25	5.6-7.3	0-0	Low	0.32	5	7	5-7
	11-15	16-24	1.10-1.25	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Moderate	0.49			
	15-21	10-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Low	0.55			
	21-31	40-55	1.20-1.30	0.06-0.2	0.12-0.18	6.6-8.4	0-2	Very high	0.32			
	31-66	30-55	1.25-1.40	0.06-0.2	0.15-0.18	7.9-9.0	0-2	Very high	0.32			
Uhlorn	0-7	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.37	5	6	4-7
	7-17	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.43			
	17-23	24-32	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.8	<2	Moderate	0.49			
	23-55	28-34	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	<2	Moderate	0.43			
	55-69	35-38	1.25-1.50	0.2-0.6	0.16-0.18	6.6-7.8	<2	High	0.43			
88 Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
89, 90:												
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
Palouse	0-15	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.32	5	6	2-4
	15-27	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43			
	27-50	20-27	1.20-1.40	0.6-2.0	0.18-0.20	6.6-7.3	0-0	Moderate	0.43			
	50-63	24-30	1.20-1.45	0.6-2.0	0.16-0.20	6.6-7.8	0-0	Moderate	0.49			
91:												
Naff	0-12	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	12-20	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	20-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
Palouse	0-15	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.32	5	6	2-4
	15-27	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43			
	27-50	20-27	1.20-1.40	0.6-2.0	0.18-0.20	6.6-7.3	0-0	Moderate	0.43			
	50-63	24-30	1.20-1.45	0.6-2.0	0.16-0.20	6.6-7.8	0-0	Moderate	0.49			
92:												
Naff	0-12	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	12-20	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	20-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
Palouse	0-15	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.32	5	6	2-4
	15-27	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43			
	27-50	20-27	1.20-1.40	0.6-2.0	0.18-0.20	6.6-7.3	0-0	Moderate	0.43			
	50-63	24-30	1.20-1.45	0.6-2.0	0.16-0.20	6.6-7.8	0-0	Moderate	0.49			
Garfield	0-4	30-40	1.15-1.35	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.32	3	4	2-3
	4-29	35-55	1.25-1.50	0.06-0.2	0.14-0.16	6.6-8.4	<2	High	0.28			
	29-61	25-40	1.20-1.45	0.2-0.6	0.18-0.21	6.6-8.4	<2	Moderate	0.32			
93:												
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
93:												
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
94, 95, 96:												
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
Waha	0-13	20-25	1.15-1.25	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43	2	6	2-3
	13-29	24-35	1.20-1.30	0.2-0.6	0.17-0.19	6.6-7.3	0-0	Moderate	0.43			
	29-34	27-38	1.20-1.30	0.2-0.6	0.13-0.17	6.6-7.3	0-0	Moderate	0.20			
	34	---	---	---	---	---	---	---	---			
97	0-11	27-32	1.10-1.25	0.6-2.0	0.19-0.25	5.6-7.3	0-0	Low	0.32	5	7	5-7
Nez Perce	11-15	16-24	1.10-1.25	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Moderate	0.49			
	15-21	10-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Low	0.55			
	21-31	40-55	1.20-1.30	0.06-0.2	0.12-0.18	6.6-8.4	0-2	Very high	0.32			
	31-66	30-55	1.25-1.40	0.06-0.2	0.15-0.18	7.9-9.0	0-2	Very high	0.32			
98	0-9	27-32	1.10-1.25	0.6-2.0	0.19-0.25	5.6-7.3	0-0	Low	0.32	5	7	5-7
Nez Perce	9-15	16-24	1.10-1.25	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Moderate	0.49			
	15-19	10-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Low	0.55			
	19-31	40-55	1.20-1.30	0.06-0.2	0.12-0.18	6.6-8.4	0-2	Very high	0.32			
	31-67	30-55	1.25-1.40	0.06-0.2	0.15-0.18	7.9-9.0	0-2	Very high	0.32			
99:												
Nez Perce	0-11	27-32	1.10-1.25	0.6-2.0	0.19-0.25	5.6-7.3	0-0	Low	0.32	5	7	5-7
	11-15	16-24	1.10-1.25	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Moderate	0.49			
	15-21	10-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Low	0.55			
	21-31	40-55	1.20-1.30	0.06-0.2	0.12-0.18	6.6-8.4	0-2	Very high	0.32			
	31-66	30-55	1.25-1.40	0.06-0.2	0.15-0.18	7.9-9.0	0-2	Very high	0.32			
Uhlorn	0-7	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.37	5	6	4-7
	7-17	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.43			
	17-23	24-32	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.8	<2	Moderate	0.49			
	23-55	28-34	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	<2	Moderate	0.43			
	55-69	35-38	1.25-1.50	0.2-0.6	0.16-0.18	6.6-7.8	<2	High	0.43			
100, 101	0-16	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.43	5	5	2-4
Oliphant	16-24	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.49			
	24-29	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.55			
	29-62	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.9-9.0	<2	Low	0.55			
102	0-8	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Low	0.43	5	5	2-4
Oliphant, gravelly substratum	8-26	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	0-0	Low	0.49			
	26-36	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	0-0	Low	0.55			
	36-62	12-18	1.25-1.45	0.6-2.0	0.10-0.18	8.5-9.0	0-2	Low	0.20			
103:												
Oliphant	0-16	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.43	5	5	2-4
	16-24	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.49			
	24-29	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.55			
	29-62	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.9-9.0	<2	Low	0.55			
Alpowa	0-12	10-15	1.20-1.30	2.0-6.0	0.16-0.18	7.4-8.4	0-0	Low	0.43	2	6	1-3
	12-60	10-15	1.30-1.40	0.6-6.0	0.04-0.10	7.9-8.4	0-2	Low	0.15			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
104:												
Oliphant	0-16	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	<2	Low	0.43	5	5	2-4
	16-24	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.49			
	24-29	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	<2	Low	0.55			
	29-62	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.9-9.0	<2	Low	0.55			
Hatwai	0-13	14-22	1.20-1.30	0.6-2.0	0.18-0.20	6.1-7.3	---	Low	0.43	2	5	2-3
	13-21	10-18	1.20-1.30	0.6-2.0	0.18-0.20	6.6-7.8	---	Low	0.55			
	21-36	22-34	1.25-1.40	0.06-0.2	0.10-0.16	7.9-9.0	0-2	Moderate	0.49			
	36-66	16-30	1.20-1.40	0.2-0.6	0.10-0.16	7.9-9.6	2-4	Low	0.55			
105:												
Oliphant	0-8	12-18	1.15-1.35	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Low	0.43	5	5	2-4
	8-26	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	0-0	Low	0.49			
	26-36	12-18	1.25-1.45	0.6-2.0	0.18-0.21	7.4-8.4	0-0	Low	0.55			
	36-62	12-18	1.25-1.45	0.6-2.0	0.10-0.18	8.5-9.0	0-2	Low	0.20			
Stember	0-9	18-25	1.15-1.30	0.6-2.0	0.16-0.18	7.9-8.4	0-2	Low	0.37	2	5	2-3
	9-13	18-25	1.25-1.45	0.6-2.0	0.10-0.15	7.9-8.4	0-2	Low	0.20			
	13-30	18-23	1.25-1.45	0.6-2.0	0.05-0.12	8.5-9.0	2-4	Low	0.10			
	30	---	---	---	---	---	---	---	---			
106, 107:												
Palouse	0-15	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.32	5	6	2-4
	15-27	18-25	1.10-1.30	0.6-2.0	0.18-0.21	6.1-7.3	0-0	Low	0.43			
	27-50	20-27	1.20-1.40	0.6-2.0	0.18-0.20	6.6-7.3	0-0	Moderate	0.43			
	50-63	24-30	1.20-1.45	0.6-2.0	0.16-0.20	6.6-7.8	0-0	Moderate	0.49			
Athena	0-14	16-22	1.15-1.30	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Low	0.37	5	5	2-4
	14-44	18-25	1.20-1.40	0.6-2.0	0.17-0.20	6.6-7.8	0-0	Low	0.49			
	44-64	14-22	1.25-1.50	0.6-2.0	0.16-0.18	7.4-8.4	0-0	Low	0.49			
108.												
Pits, gravel												
109	0-12	18-24	1.30-1.50	0.6-2.0	0.17-0.19	5.1-6.5	0-2	Low	0.37	2	5	3-4
Redmore	12-19	30-45	1.30-1.50	0.06-0.2	0.10-0.15	7.4-9.0	0-2	High	0.43			
	19-35	26-35	1.30-1.50	0.2-0.6	0.15-0.19	8.5-9.6	0-4	Moderate	0.55			
	35-42	14-25	1.30-1.50	0.6-2.0	0.16-0.18	8.5-9.6	2-4	Low	0.43			
	42-46	10-14	1.30-1.50	0.6-2.0	0.07-0.11	8.5-9.6	2-4	Low	0.17			
	46-60	---	---	---	---	---	---	---	---			
110:												
Riverwash.												
Aquents	0-2	10-18	1.40-1.60	2.0-6.0	0.12-0.17	6.1-7.3	0-0	Low	0.05	5	8	.5-2
	2-60	0-20	1.40-1.60	6.0-20	0.02-0.08	6.1-7.3	0-0	Low	0.02			
111:												
Rock outcrop.												
Flybow	0-4	15-25	1.25-1.40	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low	0.15	1	8	<1
	4	---	---	---	---	---	---	---	---			
112	0-4	14-24	0.75-1.10	0.6-2.0	0.19-0.24	5.6-6.5	---	Low	0.43	3	5	2-6
Seddow	4-13	14-24	0.90-1.20	0.6-2.0	0.17-0.24	5.1-6.0	---	Low	0.43			
	13-29	24-38	1.25-1.45	0.2-0.6	0.12-0.18	5.1-6.0	---	Moderate	0.20			
	29-48	35-40	1.25-1.40	0.2-0.6	0.07-0.10	5.6-6.5	---	Moderate	0.05			
	48	---	---	---	---	---	---	---	---			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
113----------	0-12	20-26	1.15-1.45	0.6-2.0	0.18-0.22	5.1-6.5	---	Moderate	0.43	2	6	2-5
Setters	12-17	15-26	1.25-1.55	0.6-2.0	0.18-0.22	6.1-7.3	---	Moderate	0.55			
	17-19	15-20	1.40-1.55	0.6-2.0	0.18-0.22	5.6-6.5	---	Low-------	0.55			
	19-61	35-50	1.30-1.40	0.06-0.2	0.15-0.20	5.6-7.3	---	Very high	0.37			
114----------	0-1	---	0.75-0.90	0.6-2.0	0.16-0.24	5.6-6.5	---	Low-------	0.20	4	5	4-8
Shilla	1-16	---	0.75-0.90	0.6-2.0	0.16-0.24	5.6-6.5	---	Low-------	0.24			
	16-24	24-30	1.35-1.45	0.2-0.6	0.15-0.20	5.6-6.5	---	Moderate	0.37			
	24-53	28-38	1.35-1.45	0.2-0.6	0.07-0.15	5.6-7.3	---	Moderate	0.05			
	53	---	---	---	---	---	---	----------	----			
115:												
Shilla----------	0-1	---	0.75-0.90	0.6-2.0	0.16-0.24	5.6-6.5	---	Low-------	0.20	4	5	4-8
	1-16	---	0.75-0.90	0.6-2.0	0.16-0.24	5.6-6.5	---	Low-------	0.24			
	16-24	24-30	1.35-1.45	0.2-0.6	0.15-0.20	5.6-6.5	---	Moderate	0.37			
	24-53	28-38	1.35-1.45	0.2-0.6	0.07-0.15	5.6-7.3	---	Moderate	0.05			
	53	---	---	---	---	---	---	----------	----			
Seddow----------	0-4	14-24	0.75-1.10	0.6-2.0	0.19-0.24	5.6-6.5	---	Low-------	0.43	3	5	2-6
	4-13	14-24	0.90-1.20	0.6-2.0	0.17-0.24	5.1-6.0	---	Low-------	0.43			
	13-29	24-38	1.25-1.45	0.2-0.6	0.12-0.18	5.1-6.0	---	Moderate	0.20			
	29-48	35-40	1.25-1.40	0.2-0.6	0.07-0.10	5.6-6.5	---	Moderate	0.05			
	48	---	---	---	---	---	---	----------	----			
116----------	0-12	18-26	1.10-1.25	0.6-2.0	0.18-0.22	6.1-6.5	<2	Moderate	0.43	3	6	2-4
Slickpoo	12-22	22-32	1.20-1.40	0.2-0.6	0.15-0.18	6.6-7.8	<2	Moderate	0.37			
	22-37	28-36	1.30-1.50	0.2-0.6	0.12-0.18	6.6-7.8	<2	Moderate	0.24			
	37-45	20-27	1.30-1.50	0.6-2.0	0.10-0.15	7.9-8.4	<2	Moderate	0.10			
	45	---	---	---	---	---	---	----------	----			
117:												
Slickpoo---------	0-12	18-26	1.10-1.25	0.6-2.0	0.18-0.22	6.1-6.5	<2	Moderate	0.43	3	6	2-4
	12-22	22-32	1.20-1.40	0.2-0.6	0.15-0.18	6.6-7.8	<2	Moderate	0.37			
	22-37	28-36	1.30-1.50	0.2-0.6	0.12-0.18	6.6-7.8	<2	Moderate	0.24			
	37-45	20-27	1.30-1.50	0.6-2.0	0.10-0.15	7.9-8.4	<2	Moderate	0.10			
	45	---	---	---	---	---	---	----------	----			
Broadax---------	0-16	18-24	1.20-1.40	0.6-2.0	0.18-0.20	5.6-7.3	0-0	Moderate	0.43	5	6	2-4
	16-33	24-35	1.20-1.40	0.2-0.6	0.12-0.20	7.4-7.8	0-0	Moderate	0.43			
	33-37	18-25	1.20-1.40	0.6-2.0	0.12-0.20	7.4-8.4	0-0	Moderate	0.49			
	37-65	15-25	1.20-1.40	0.6-2.0	0.16-0.20	7.9-9.0	0-2	Moderate	0.49			
118----------	0-9	18-26	1.15-1.45	0.6-2.0	0.18-0.24	5.6-7.3	---	Moderate	0.32	5	5	2-5
Southwick	9-26	20-27	1.25-1.50	0.6-2.0	0.18-0.24	5.6-6.5	---	Moderate	0.49			
	26-32	12-20	1.35-1.55	0.6-2.0	0.18-0.24	5.6-7.3	---	Low-------	0.55			
	32-46	27-34	1.60-1.70	0.00-0.06	0.08-0.18	5.6-6.5	---	Moderate	0.43			
	46-64	30-38	1.45-1.65	0.2-0.6	0.10-0.20	5.6-7.3	---	Moderate	0.43			
119:												
Southwick-------	0-9	18-26	1.15-1.45	0.6-2.0	0.18-0.24	5.6-7.3	---	Moderate	0.32	5	5	2-5
	9-26	20-27	1.25-1.50	0.6-2.0	0.18-0.24	5.6-6.5	---	Moderate	0.49			
	26-32	12-20	1.35-1.55	0.6-2.0	0.18-0.24	5.6-7.3	---	Low-------	0.55			
	32-46	27-34	1.60-1.70	0.00-0.06	0.08-0.18	5.6-6.5	---	Moderate	0.43			
	46-64	30-38	1.45-1.65	0.2-0.6	0.10-0.20	5.6-7.3	---	Moderate	0.43			
Bluesprin-------	0-14	20-27	1.30-1.45	0.6-2.0	0.19-0.21	5.6-7.3	<2	Low-------	0.37	2	6	2-4
	14-22	25-32	1.50-1.65	0.2-0.6	0.10-0.12	6.1-7.3	<2	Moderate	0.15			
	22-28	28-34	1.50-1.65	0.2-0.6	0.06-0.08	6.1-7.3	<2	Moderate	0.10			
	28	---	---	---	---	---	---	----------	----			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
120, 121:												
Southwick	0-9	18-26	1.15-1.45	0.6-2.0	0.18-0.24	5.6-7.3	---	Moderate	0.32	5	5	2-5
	9-26	20-27	1.25-1.50	0.6-2.0	0.18-0.24	5.6-6.5	---	Moderate	0.49			
	26-32	12-20	1.35-1.55	0.6-2.0	0.18-0.24	5.6-7.3	---	Low	0.55			
	32-46	27-34	1.60-1.70	0.00-0.06	0.08-0.18	5.6-6.5	---	Moderate	0.43			
	46-64	30-38	1.45-1.65	0.2-0.6	0.10-0.20	5.6-7.3	---	Moderate	0.43			
Driscoll	0-13	18-26	1.30-1.50	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.32	5	5	3-5
	13-31	12-26	1.45-1.55	0.6-2.0	0.19-0.24	5.6-7.3	0-0	Low	0.55			
	31-46	38-55	1.50-1.55	0.06-0.2	0.15-0.20	5.6-7.3	0-0	High	0.37			
	46-60	32-38	1.40-1.50	0.06-0.2	0.19-0.21	6.1-7.3	0-0	High	0.43			
122:												
Southwick	0-9	18-26	1.15-1.45	0.6-2.0	0.18-0.24	5.6-7.3	---	Moderate	0.32	5	5	2-5
	9-26	20-27	1.25-1.50	0.6-2.0	0.18-0.24	5.6-6.5	---	Moderate	0.49			
	26-32	12-20	1.35-1.55	0.6-2.0	0.18-0.24	5.6-7.3	---	Low	0.55			
	32-46	27-34	1.60-1.70	0.00-0.06	0.08-0.18	5.6-6.5	---	Moderate	0.43			
	46-64	30-38	1.45-1.65	0.2-0.6	0.10-0.20	5.6-7.3	---	Moderate	0.43			
Larkin	0-19	15-24	1.15-1.30	0.6-2.0	0.19-0.21	5.6-7.3	0-0	Low	0.32	5	6	3-5
	19-61	24-35	1.20-1.40	0.2-0.6	0.19-0.21	5.6-7.3	0-0	Moderate	0.43			
123:												
Sweiting	0-12	20-27	1.15-1.25	0.6-2.0	0.19-0.25	5.6-6.5	0-0	Low	0.37	2	6	3-6
	12-23	27-40	1.25-1.45	0.2-0.6	0.14-0.18	6.1-6.5	0-0	Moderate	0.37			
	23-31	40-50	1.45-1.65	0.06-0.2	0.06-0.12	6.1-7.3	0-0	Very high	0.15			
	31	---	---	---	---	---	---	---	---			
Joel	0-18	20-27	1.20-1.35	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	5	6	2-5
	18-24	20-27	1.25-1.40	0.6-2.0	0.18-0.24	5.6-7.3	0-0	Low	0.43			
	24-60	24-35	1.30-1.50	0.2-0.6	0.15-0.19	5.6-7.3	0-0	Moderate	0.49			
124, 125	0-3	16-22	0.85-1.10	0.6-2.0	0.19-0.22	5.6-6.5	---	Low	0.43	5	5	3-6
Talmaks	3-16	18-24	0.95-1.20	0.6-2.0	0.18-0.22	5.6-6.5	---	Low	0.49			
	16-47	24-36	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.43			
	47-70	28-40	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.49			
126:												
Talmaks	0-3	16-22	0.85-1.10	0.6-2.0	0.19-0.22	5.6-6.5	---	Low	0.43	5	5	3-6
	3-16	18-24	0.95-1.20	0.6-2.0	0.18-0.22	5.6-6.5	---	Low	0.49			
	16-47	24-36	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.43			
	47-70	28-40	1.30-1.50	0.2-0.6	0.14-0.18	5.6-6.5	---	Low	0.49			
Seddow	0-4	14-24	0.75-1.10	0.6-2.0	0.19-0.24	5.6-6.5	---	Low	0.43	3	5	2-6
	4-13	14-24	0.90-1.20	0.6-2.0	0.17-0.24	5.1-6.0	---	Low	0.43			
	13-29	24-38	1.25-1.45	0.2-0.6	0.12-0.18	5.1-6.0	---	Moderate	0.20			
	29-48	35-40	1.25-1.40	0.2-0.6	0.07-0.10	5.6-6.5	---	Moderate	0.05			
	48	---	---	---	---	---	---	---	---			
127:												
Tammany	0-4	14-22	1.15-1.30	0.6-2.0	0.16-0.20	6.6-7.8	---	Low	0.32	5	5	2-3
	4-10	14-22	1.25-1.40	0.6-2.0	0.07-0.10	6.6-7.8	---	Low	0.17			
	10-17	14-22	1.25-1.40	0.6-2.0	0.07-0.10	6.6-7.8	---	Low	0.15			
	17-29	8-16	1.35-1.50	2.0-6.0	0.05-0.09	7.9-8.4	0-2	Low	0.05			
	29-60	2-6	1.50-1.60	>20	0.02-0.04	7.9-8.4	0-2	Low	0.02			
Chard	0-15	8-14	1.15-1.30	0.6-2.0	0.16-0.18	6.6-7.8	0-0	Low	0.43	4	5	1-2
	15-32	6-12	1.20-1.35	0.6-2.0	0.16-0.18	6.6-8.4	0-0	Low	0.55			
	32-55	4-10	1.30-1.45	2.0-6.0	0.13-0.17	7.9-9.0	0-2	Low	0.43			
	55-62	0-5	1.50-1.65	6.0-20	0.05-0.10	8.5-9.6	0-2	Low	0.20			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
127:												
Rock outcrop.												
128	0-14	20-27	1.15-1.45	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Moderate	0.49	3	6	2-5
Taney	14-23	18-27	1.25-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Moderate	0.49			
	23-29	10-20	1.40-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.55			
	29-36	23-35	1.60-1.75	0.00-0.06	0.04-0.08	5.6-6.5	0-0	Moderate	0.43			
	36-63	28-42	1.45-1.65	0.2-0.6	0.06-0.10	5.6-7.3	0-0	Moderate	0.43			
129, 130:												
Taney	0-14	20-27	1.15-1.45	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Moderate	0.49	3	6	2-5
	14-23	18-27	1.25-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Moderate	0.49			
	23-29	10-20	1.40-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.55			
	29-36	23-35	1.60-1.75	0.00-0.06	0.04-0.08	5.6-6.5	0-0	Moderate	0.43			
	36-63	28-42	1.45-1.65	0.2-0.6	0.06-0.10	5.6-7.3	0-0	Moderate	0.43			
Joel	0-18	20-27	1.20-1.35	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	5	6	2-5
	18-24	20-27	1.25-1.40	0.6-2.0	0.18-0.24	5.6-7.3	0-0	Low	0.43			
	24-60	24-35	1.30-1.50	0.2-0.6	0.15-0.19	5.6-7.3	0-0	Moderate	0.49			
131, 132:												
Taney	0-14	20-27	1.15-1.45	0.6-2.0	0.18-0.24	5.1-6.5	0-0	Moderate	0.49	3	6	2-5
	14-23	18-27	1.25-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Moderate	0.49			
	23-29	10-20	1.40-1.55	0.6-2.0	0.18-0.24	5.6-6.5	0-0	Low	0.55			
	29-36	23-35	1.60-1.75	0.00-0.06	0.04-0.08	5.6-6.5	0-0	Moderate	0.43			
	36-63	28-42	1.45-1.65	0.2-0.6	0.06-0.10	5.6-7.3	0-0	Moderate	0.43			
Setters	0-12	20-26	1.15-1.45	0.6-2.0	0.18-0.22	5.1-6.5	---	Moderate	0.43	2	6	2-5
	12-17	15-26	1.25-1.55	0.6-2.0	0.18-0.22	6.1-7.3	---	Moderate	0.55			
	17-19	15-20	1.40-1.55	0.6-2.0	0.18-0.22	5.6-6.5	---	Low	0.55			
	19-61	35-50	1.30-1.40	0.06-0.2	0.15-0.20	5.6-7.3	---	Very high	0.37			
133:												
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
134:												
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
Naff	0-12	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	12-20	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	20-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
135:												
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
136:												
Thatuna	0-16	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.32	5	6	3-6
	16-31	18-25	1.15-1.30	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Moderate	0.37			
	31-37	10-18	1.20-1.45	0.6-2.0	0.18-0.22	6.1-7.3	0-0	Low	0.55			
	37-61	27-35	1.60-1.70	0.06-0.2	0.12-0.18	6.6-7.3	0-0	Moderate	0.49			
Naff	0-18	15-25	1.15-1.30	0.6-2.0	0.18-0.21	6.1-7.3	<2	Low	0.37	5	6	2-4
	18-25	26-35	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Moderate	0.43			
	25-60	30-35	1.25-1.50	0.2-0.6	0.16-0.18	6.1-7.8	<2	Moderate	0.49			
Tilma	0-25	20-25	1.35-1.45	0.6-2.0	0.19-0.20	5.6-7.3	0-0	Low	0.32	3	6	3-5
	25-60	35-50	1.50-1.60	0.06-0.2	0.14-0.17	5.6-7.3	0-0	High	0.32			
137	0-7	15-20	1.15-1.25	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Low	0.32	5	5	2-5
Tombeall	7-28	15-20	1.20-1.40	0.6-2.0	0.11-0.13	6.6-7.8	0-0	Low	0.28			
	28-35	5-15	1.25-1.45	2.0-6.0	0.06-0.10	6.6-7.8	0-0	Low	0.05			
	35-60	5-15	1.35-1.55	2.0-6.0	0.02-0.05	6.6-7.8	0-0	Low	0.02			
138, 139, 140	0-15	10-18	1.15-1.30	0.6-2.0	0.16-0.22	6.1-7.3	0-0	Low	0.37	5	5	2-4
Uhlig	15-39	10-18	1.25-1.45	0.6-2.0	0.16-0.20	6.6-7.3	0-0	Low	0.37			
	39-68	5-15	1.30-1.50	2.0-6.0	0.12-0.18	6.6-7.8	0-0	Low	0.49			
141	0-7	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.37	5	6	4-7
Uhlorn	7-17	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.43			
	17-23	24-32	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.8	<2	Moderate	0.49			
	23-55	28-34	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	<2	Moderate	0.43			
	55-69	35-38	1.25-1.50	0.2-0.6	0.16-0.18	6.6-7.8	<2	High	0.43			
142, 143:												
Uhlorn	0-7	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.37	5	6	4-7
	7-17	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.43			
	17-23	24-32	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.8	<2	Moderate	0.49			
	23-55	28-34	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	<2	Moderate	0.43			
	55-69	35-38	1.25-1.50	0.2-0.6	0.16-0.18	6.6-7.8	<2	High	0.43			
Nez Perce	0-11	27-32	1.10-1.25	0.6-2.0	0.19-0.25	5.6-7.3	0-0	Low	0.32	5	7	5-7
	11-15	16-24	1.10-1.25	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Moderate	0.49			
	15-21	10-20	1.30-1.50	0.6-2.0	0.19-0.25	6.1-7.3	0-0	Low	0.55			
	21-31	40-55	1.20-1.30	0.06-0.2	0.12-0.18	6.6-8.4	0-2	Very high	0.32			
	31-66	30-55	1.25-1.40	0.06-0.2	0.15-0.18	7.9-9.0	0-2	Very high	0.32			
144:												
Uhlorn	0-7	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.37	5	6	4-7
	7-17	20-25	1.10-1.30	0.6-2.0	0.18-0.21	5.6-7.3	<2	Low	0.43			
	17-23	24-32	1.20-1.40	0.2-0.6	0.17-0.20	6.1-7.8	<2	Moderate	0.49			
	23-55	28-34	1.25-1.50	0.2-0.6	0.17-0.20	6.6-7.8	<2	Moderate	0.43			
	55-69	35-38	1.25-1.50	0.2-0.6	0.16-0.18	6.6-7.8	<2	High	0.43			
Vollmer	0-12	18-24	1.20-1.30	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low	0.37	2	5	2-5
	12-28	24-35	1.25-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Low	0.43			
	28-36	24-35	1.25-1.35	0.2-0.6	0.15-0.19	6.1-7.3	<2	Low	0.32			
	36	---	---	---	---	---	---	---	---			
145:												
Urban land.												
Wistona	0-8	5-12	1.10-1.30	0.6-2.0	0.15-0.17	6.6-7.8	---	Low	0.49	5	3	1-3
	8-45	5-12	1.20-1.40	0.6-2.0	0.13-0.17	7.4-8.4	---	Low	0.49			
	45-64	4-10	1.20-1.40	0.6-2.0	0.13-0.17	7.9-9.0	0-2	Low	0.49			

Table 16.--Physical and Chemical Properties of the Soils--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
146---	0-4	15-20	1.40-1.55	0.6-2.0	0.18-0.20	5.6-6.5	0-0	Low	0.37	5	5	1-3
Uvi	4-55	12-20	1.45-1.55	0.6-2.0	0.12-0.16	5.6-6.5	0-0	Low	0.32			
	55-65	5-12	1.45-1.60	0.6-6.0	0.08-0.12	5.6-6.5	0-0	Low	0.17			
147, 148---	0-12	18-24	1.20-1.30	0.6-2.0	0.19-0.21	6.1-7.3	<2	Low	0.37	2	5	2-5
Vollmer	12-28	24-35	1.25-1.40	0.2-0.6	0.17-0.20	6.1-7.3	<2	Low	0.43			
	28-36	24-35	1.25-1.35	0.2-0.6	0.15-0.19	6.1-7.3	<2	Low	0.32			
	36	---	---	---	---	---	---	---	---			
149:												
Watama---	0-11	18-27	1.10-1.25	0.6-2.0	0.18-0.21	6.6-7.3	0-0	Moderate	0.32	2	6	3-5
	11-34	18-27	1.10-1.30	0.6-2.0	0.18-0.21	6.6-7.8	0-0	Moderate	0.37			
	34-38	18-27	1.20-1.40	0.6-2.0	0.14-0.18	6.6-7.8	0-0	Moderate	0.32			
	38	---	---	---	---	---	---	---	---			
Flybow---	0-4	15-25	1.25-1.40	0.6-2.0	0.08-0.12	6.1-7.3	<2	Low	0.15	1	8	<1
	4	---	---	---	---	---	---	---	---			
150:												
Webbridge---	0-3	---	0.75-0.90	0.6-2.0	0.16-0.24	6.1-7.3	0-0	Low	0.20	3	5	4-8
	3-17	---	0.75-0.90	0.6-2.0	0.16-0.24	5.6-6.5	0-0	Low	0.20			
	17-34	25-32	1.25-1.40	0.2-0.6	0.08-0.16	5.6-6.5	0-0	Moderate	0.20			
	34-53	25-32	1.25-1.40	0.2-0.6	0.03-0.13	5.6-7.3	0-0	Moderate	0.05			
	53	---	---	---	---	---	---	---	---			
Agatha---	0-15	12-24	1.40-1.45	0.6-2.0	0.16-0.20	5.6-7.3	0-0	Low	0.32	3	6	1-3
	15-23	18-30	1.45-1.55	0.2-2.0	0.13-0.17	5.6-6.5	0-0	Low	0.20			
	23-47	24-35	1.45-1.50	0.2-0.6	0.04-0.09	5.6-6.5	0-0	Low	0.10			
	47	---	---	---	---	---	---	---	---			
151:												
Westlake---	0-10	20-26	1.15-1.35	0.6-2.0	0.19-0.22	6.6-7.3	<2	Moderate	0.37	5	6	4-7
	10-21	20-26	1.15-1.35	0.6-2.0	0.19-0.22	6.6-7.3	<2	Moderate	0.37			
	21-49	25-34	1.30-1.50	0.2-0.6	0.18-0.20	6.6-7.8	<2	Moderate	0.43			
	49-64	20-32	1.30-1.50	0.2-0.6	0.18-0.20	6.6-7.8	<2	Moderate	0.49			
Latahco---	0-13	15-25	1.15-1.35	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Moderate	0.32	5	6	4-7
	13-22	15-25	1.15-1.35	0.6-2.0	0.19-0.21	6.1-7.3	0-0	Moderate	0.37			
	22-35	8-16	1.30-1.40	0.6-2.0	0.16-0.18	6.1-7.3	0-0	Low	0.55			
	35-60	25-35	1.30-1.50	0.2-0.6	0.17-0.19	7.4-8.4	0-0	Moderate	0.49			
152---	0-15	18-27	1.10-1.25	0.6-2.0	0.18-0.22	5.6-7.3	0-0	Moderate	0.32	3	6	3-6
Wilkins	15-20	10-20	1.30-1.50	0.6-2.0	0.18-0.22	5.6-7.3	0-0	Low	0.55			
	20-52	40-50	1.20-1.30	<0.06	0.12-0.18	6.1-7.3	0-0	Very high	0.32			
	52-64	27-40	1.25-1.40	0.2-0.6	0.16-0.21	6.6-7.3	0-0	Moderate	0.37			
153---	0-8	5-12	1.10-1.30	0.6-2.0	0.15-0.17	6.6-7.8	---	Low	0.49	5	3	1-3
Wistona	8-45	5-12	1.20-1.40	0.6-2.0	0.13-0.17	7.4-8.4	---	Low	0.49			
	45-64	4-10	1.20-1.40	0.6-2.0	0.13-0.17	7.9-9.0	0-2	Low	0.49			
154:												
Zaza---	0-4	10-18	1.15-1.35	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low	0.20	1	5	.5-4
	4-8	10-18	1.20-1.40	0.6-2.0	0.10-0.15	5.6-6.5	<2	Low	0.15			
	8-14	10-18	1.20-1.40	0.6-2.0	0.08-0.14	5.6-6.5	<2	Low	0.10			
	14	---	---	---	---	---	---	---	---			
Sweiting---	0-12	20-27	1.15-1.25	0.6-2.0	0.19-0.25	5.6-6.5	0-0	Low	0.37	2	6	3-6
	12-23	27-40	1.25-1.45	0.2-0.6	0.14-0.18	6.1-6.5	0-0	Moderate	0.37			
	23-31	40-50	1.45-1.65	0.06-0.2	0.06-0.12	6.1-7.3	0-0	Very high	0.15			
	31	---	---	---	---	---	---	---	---			

Table 17.--Water Features

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
1, 2 Agatha	B	None	---	---	>6.0	---	---
3: Agatha	B	None	---	---	>6.0	---	---
Rock outcrop.							
4 Ahsahka	C	None	---	---	>6.0	---	---
5: Almota	C	None	---	---	>6.0	---	---
Athena	B	None	---	---	>6.0	---	---
Hatwai	C	None	---	---	>6.0	---	---
6: Almota	C	None	---	---	>6.0	---	---
Linville	B	None	---	---	>6.0	---	---
7, 8: Alpowa	B	None	---	---	>6.0	---	---
Lickskillet	D	None	---	---	>6.0	---	---
9 Aquolls	D	Occasional	Brief	Mar-Jun	+0.5-1.5	Apparent	Mar-Jun
10 Athena	B	None	---	---	>6.0	---	---
11: Bakeoven	D	None	---	---	>6.0	---	---
Watama	C	None	---	---	>6.0	---	---
12: Boles	D	None	---	---	1.0-1.5	Perched	Feb-Apr
Joel	B	None	---	---	>6.0	---	---
13: Bridgewater	B	Rare	---	---	>6.0	---	---
Joseph	C	Frequent	Long	Dec-Jun	3.0-5.0	Apparent	Dec-Jun
14, 15 Broadax	B	None	---	---	>6.0	---	---
16, 17: Broadax	B	None	---	---	>6.0	---	---
Hatwai	C	None	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
18:							
Caldwell	C	Occasional	Very brief	Jan-May	3.0-5.0	Apparent	Nov-Jun
Latah	D	Occasional	Brief	Dec-Apr	0.5-2.5	Perched	Dec-Apr
19:							
Calouse	B	None	---	---	>6.0	---	---
Almota	C	None	---	---	>6.0	---	---
20:							
Calouse	B	None	---	---	>6.0	---	---
Endicott	C	None	---	---	>6.0	---	---
Bryden	C	None	---	---	>6.0	---	---
21, 22 Carlinton	C	None	---	---	1.5-3.0	Perched	Feb-May
23:							
Carlinton	C	None	---	---	1.5-3.0	Perched	Feb-May
Talmaks	B	None	---	---	>6.0	---	---
24:							
Cavendish	B	None	---	---	>6.0	---	---
Taney	C	None	---	---	2.0-2.5	Perched	Feb-Apr
25, 26, 27 Chard	B	None	---	---	>6.0	---	---
28:							
Chard	B	None	---	---	>6.0	---	---
Chard, moist	B	None	---	---	>6.0	---	---
29:							
Chard	B	None	---	---	>6.0	---	---
Tammany	B	None	---	---	>6.0	---	---
30:							
Chard Urban land.	B	None	---	---	>6.0	---	---
31 Cramont	C	None	---	---	>6.0	---	---
32:							
Cramont	C	None	---	---	>6.0	---	---
Culdesac	B	None	---	---	>6.0	---	---
33:							
Cramont	C	None	---	---	>6.0	---	---
Seddow	B	None	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
34---------- Crowers	B	None----------	---	---	>6.0	---	---
35---------- Driscoll	C	None----------	---	---	1.5-2.5	Perched	Jan-Apr
36: Driscoll----------	C	None----------	---	---	1.5-2.5	Perched	Jan-Apr
Larkin----------	B	None----------	---	---	>6.0	---	---
37, 38: Endicott----------	C	None----------	---	---	>6.0	---	---
Bryden----------	C	None----------	---	---	>6.0	---	---
39: Endicott----------	C	None----------	---	---	>6.0	---	---
Oliphant----------	B	None----------	---	---	>6.0	---	---
40---------- Entic Haploxerolls	C	None----------	---	---	>6.0	---	---
41: Gwin----------	D	None----------	---	---	>6.0	---	---
Vollmer----------	C	None----------	---	---	>6.0	---	---
42---------- Haploxerolls	C	None----------	---	---	>6.0	---	---
43---------- Hooverton	C	None----------	---	---	>6.0	---	---
44---------- Immig	C	None----------	---	---	>6.0	---	---
45, 46---------- Jacket	C	None----------	---	---	>6.0	---	---
47: Jacket----------	C	None----------	---	---	>6.0	---	---
Larkin----------	B	None----------	---	---	>6.0	---	---
48, 49---------- Joel	B	None----------	---	---	>6.0	---	---
50, 51: Joel----------	B	None----------	---	---	>6.0	---	---
Setters----------	C	None----------	---	---	1.0-2.0	Perched	Feb-Apr
52---------- Johnson	B	None----------	---	---	>6.0	---	---
53: Johnson----------	B	None----------	---	---	>6.0	---	---
Dragnot----------	C	None----------	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
53:							
Dragnot, dry	C	None	---	---	>6.0	---	---
54:							
Johnson	B	None	---	---	>6.0	---	---
Kruse	B	None	---	---	>6.0	---	---
55:							
Johnson	B	None	---	---	>6.0	---	---
Labuck	B	None	---	---	>6.0	---	---
56:							
Joseph	C	Occasional	Long	Dec-Jun	3.0-5.0	Apparent	Dec-Jun
Tombeall	D	Occasional	Brief	Dec-Jun	1.0-2.5	Apparent	Feb-Apr
57:							
Kettenbach	C	None	---	---	>6.0	---	---
Kettenbach, moist	C	None	---	---	>6.0	---	---
Gwin	D	None	---	---	>6.0	---	---
58:							
Kettenbach	C	None	---	---	>6.0	---	---
Keuterville	B	None	---	---	>6.0	---	---
59:							
Kettenbach	C	None	---	---	>6.0	---	---
Rock outcrop.							
60, 61 Keuterville	B	None	---	---	>6.0	---	---
62:							
Keuterville	B	None	---	---	>6.0	---	---
Rock outcrop.							
63, 64 Klickson	B	None	---	---	>6.0	---	---
65:							
Klickson	B	None	---	---	>6.0	---	---
Agatha	B	None	---	---	>6.0	---	---
66:							
Klickson	B	None	---	---	>6.0	---	---
Hooverton	C	None	---	---	>6.0	---	---
67:							
Klickson	B	None	---	---	>6.0	---	---
Rock outcrop.							

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
68:							
Klickson	B	None	---	---	>6.0	---	---
Uptmor	C	None	---	---	>6.0	---	---
69--Kruse	B	None	---	---	>6.0	---	---
70:							
Lapwai	B	Rare	---	---	>6.0	---	---
Bridgewater	B	Rare	---	---	>6.0	---	---
71--Larabee	C	None	---	---	>6.0	---	---
72:							
Larabee	C	None	---	---	>6.0	---	---
Gwin	D	None	---	---	>6.0	---	---
73:							
Larabee	C	None	---	---	>6.0	---	---
Zaza	D	None	---	---	>6.0	---	---
Seddow	B	None	---	---	>6.0	---	---
74:							
Larkin	B	None	---	---	>6.0	---	---
Driscoll	C	None	---	---	1.5-2.5	Perched	Jan-Apr
75:							
Latahco	C	Occasional	Brief	Feb-Apr	1.5-3.0	Perched	Feb-May
Thatuna	C	None	---	---	2.0-3.0	Perched	Feb-Apr
76:							
Lauby	B	None	---	---	>6.0	---	---
Southwick	C	None	---	---	1.5-3.0	Perched	Feb-Apr
77:							
Lickskillet	D	None	---	---	>6.0	---	---
Alpowa	B	None	---	---	>6.0	---	---
Rock outcrop.							
78--Limekiln	D	None	---	---	>6.0	---	---
79:							
Limekiln	D	None	---	---	>6.0	---	---
Crowers	B	None	---	---	>6.0	---	---
80--Linville	B	None	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
81:							
Linville	B	None	---	---	>6.0	---	---
Kettenbach	C	None	---	---	>6.0	---	---
82:							
Linville	B	None	---	---	>6.0	---	---
Waha	C	None	---	---	>6.0	---	---
83:							
Mallory	C	None	---	---	>6.0	---	---
Jacket	C	None	---	---	>6.0	---	---
84:							
Maloney	C	None	---	---	>6.0	---	---
Zaza	D	None	---	---	>6.0	---	---
85:							
Meland	C	None	---	---	>6.0	---	---
Jacket	C	None	---	---	>6.0	---	---
86:							
Meland	C	None	---	---	>6.0	---	---
Keuterville	B	None	---	---	>6.0	---	---
87:							
Mohler	B	None	---	---	>6.0	---	---
Nez Perce	D	None	---	---	1.0-1.5	Perched	Feb-Apr
Uhlorn	B	None	---	---	>6.0	---	---
88---------- Naff	B	None	---	---	>6.0	---	---
89, 90:							
Naff	B	None	---	---	>6.0	---	---
Palouse	B	None	---	---	>6.0	---	---
91:							
Naff	B	None	---	---	>6.0	---	---
Palouse	B	None	---	---	>6.0	---	---
92:							
Naff	B	None	---	---	>6.0	---	---
Palouse	B	None	---	---	>6.0	---	---
Garfield	C	None	---	---	>6.0	---	---
93:							
Naff	B	None	---	---	>6.0	---	---
Thatuna	C	None	---	---	2.0-3.0	Perched	Feb-Apr

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
94, 95, 96:							
Naff	B	None	---	---	>6.0	---	---
Waha	C	None	---	---	>6.0	---	---
97, 98	D	None	---	---	1.0-1.5	Perched	Feb-Apr
Nez Perce							
99:							
Nez Perce	D	None	---	---	1.0-1.5	Perched	Feb-Apr
Uhlorn	B	None	---	---	>6.0	---	---
100, 101	B	None	---	---	>6.0	---	---
Oliphant							
102	B	None	---	---	>6.0	---	---
Oliphant, gravelly substratum							
103:							
Oliphant	B	None	---	---	>6.0	---	---
Alpowa	B	None	---	---	>6.0	---	---
104:							
Oliphant	B	None	---	---	>6.0	---	---
Hatwai	C	None	---	---	>6.0	---	---
105:							
Oliphant	B	None	---	---	>6.0	---	---
Stember	C	None	---	---	>6.0	---	---
106, 107:							
Palouse	B	None	---	---	>6.0	---	---
Athena	B	None	---	---	>6.0	---	---
108.							
Pits, gravel							
109	C	None	---	---	>6.0	---	---
Redmore							
110:							
Riverwash.							
Aquents	D	Frequent	Long	Dec-Jun	0.5-2.0	Apparent	Nov-Jul
111:							
Rock outcrop.							
Flybow	D	None	---	---	>6.0	---	---
112	B	None	---	---	>6.0	---	---
Seddow							
113	C	None	---	---	1.0-2.0	Perched	Feb-Apr
Setters							

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
114---------- Shilla	B	None----------	---	---	>6.0	---	---
115:							
Shilla----------	B	None----------	---	---	>6.0	---	---
Seddow----------	B	None----------	---	---	>6.0	---	---
116---------- Slickpoo	B	None----------	---	---	>6.0	---	---
117:							
Slickpoo----------	B	None----------	---	---	>6.0	---	---
Broadax----------	B	None----------	---	---	>6.0	---	---
118---------- Southwick	C	None----------	---	---	1.5-3.0	Perched	Feb-Apr
119:							
Southwick----------	C	None----------	---	---	1.5-3.0	Perched	Feb-Apr
Bluesprin----------	C	None----------	---	---	>6.0	---	---
120, 121:							
Southwick----------	C	None----------	---	---	1.5-3.0	Perched	Feb-Apr
Driscoll----------	C	None----------	---	---	1.5-2.5	Perched	Jan-Apr
122:							
Southwick----------	C	None----------	---	---	1.5-3.0	Perched	Feb-Apr
Larkin----------	B	None----------	---	---	>6.0	---	---
123:							
Sweiting----------	C	None----------	---	---	>6.0	---	---
Joel----------	B	None----------	---	---	>6.0	---	---
124, 125---------- Talmaks	B	None----------	---	---	>6.0	---	---
126:							
Talmaks----------	B	None----------	---	---	>6.0	---	---
Seddow----------	B	None----------	---	---	>6.0	---	---
127:							
Tammany----------	B	None----------	---	---	>6.0	---	---
Chard----------	B	None----------	---	---	>6.0	---	---
Rock outcrop.							
128---------- Taney	C	None----------	---	---	2.0-2.5	Perched	Feb-Apr
129, 130:							
Taney----------	C	None----------	---	---	2.0-2.5	Perched	Feb-Apr
Joel----------	B	None----------	---	---	>6.0	---	---

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
131, 132:							
Taney	C	None	---	---	2.0-2.5	Perched	Feb-Apr
Setters	C	None	---	---	1.0-2.0	Perched	Feb-Apr
133, 134, 135:							
Thatuna	C	None	---	---	2.0-3.0	Perched	Feb-Apr
Naff	B	None	---	---	>6.0	---	---
136:							
Thatuna	C	None	---	---	2.0-3.0	Perched	Feb-Apr
Naff	B	None	---	---	>6.0	---	---
Tilma	C	None	---	---	1.5-2.5	Perched	Nov-Apr
137--Tombeall	D	Rare	---	---	1.0-2.5	Apparent	Feb-Apr
138, 139, 140--Uhlig	B	None	---	---	>6.0	---	---
141--Uhlorn	B	None	---	---	>6.0	---	---
142, 143:							
Uhlorn	B	None	---	---	>6.0	---	---
Nez Perce	D	None	---	---	1.0-1.5	Perched	Feb-Apr
144:							
Uhlorn	B	None	---	---	>6.0	---	---
Vollmer	C	None	---	---	>6.0	---	---
145:							
Urban land.							
Wistona	B	Rare	---	---	>6.0	---	---
146--Uvi	B	None	---	---	>6.0	---	---
147, 148--Vollmer	C	None	---	---	>6.0	---	---
149:							
Watama	C	None	---	---	>6.0	---	---
Flybow	D	None	---	---	>6.0	---	---
150:							
Webbridge	B	None	---	---	>6.0	---	---
Agatha	B	None	---	---	>6.0	---	---
151:							
Westlake	C	Occasional	Brief	Feb-Apr	1.5-2.5	Apparent	Feb-May
Latahco	C	Occasional	Brief	Feb-Apr	1.5-3.0	Perched	Feb-May

Table 17.--Water Features--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
152---------- Wilkins	D	Occasional------	Brief---------	Mar-May	1.0-1.5	Perched	Feb-May
153---------- Wistona	B	Rare----------	---	---	>6.0	---	---
154:							
Zaza----------	D	None----------	---	---	>6.0	---	---
Sweiting----------	C	None----------	---	---	>6.0	---	---

Table 18.--Soil Features

(The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
1, 2---------- Agatha	40-60	Hard	---	---	Moderate	Moderate	Moderate.
3: Agatha---------- Rock outcrop.	40-60	Hard	---	---	Moderate	Moderate	Moderate.
4---------- Ahsahka	>60	---	---	---	Moderate	Moderate	Moderate.
5: Almota---------- Athena---------- Hatwai----------	30-40 >60 >60	Hard --- ---	--- --- ---	--- --- ---	High High High	High High High	Moderate. Low. Low.
6: Almota---------- Linville----------	30-40 >60	Hard ---	--- ---	--- ---	High Moderate	High High	Moderate. Low.
7, 8: Alpowa---------- Lickskillet----------	>60 12-20	--- Hard	--- ---	--- ---	High Moderate	High High	Moderate. Low.
9---------- Aquolls	>40	Hard	---	---	High	High	Moderate.
10---------- Athena	>60	---	---	---	High	High	Low.
11: Bakeoven---------- Watama----------	4-10 20-40	Hard Hard	--- ---	--- ---	Moderate Moderate	Moderate Moderate	Low. Low.
12: Boles---------- Joel----------	>60 >60	--- ---	--- ---	--- ---	High High	High Moderate	Low. Moderate.
13: Bridgewater---------- Joseph----------	>60 >60	--- ---	--- ---	--- ---	Moderate Low	Low Moderate	Low. Low.
14, 15---------- Broadax	>60	---	---	---	High	High	Low.
16, 17: Broadax---------- Hatwai----------	>60 >60	--- ---	--- ---	--- ---	High High	High High	Low. Low.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
18:							
Caldwell	>60	---	---	---	High	Moderate	Moderate.
Latah	>60	---	---	---	High	Moderate	Low.
19:							
Calouse	>60	---	---	---	High	High	Low.
Almota	30-40	Hard	---	---	High	High	Moderate.
20:							
Calouse	>60	---	---	---	High	High	Low.
Endicott	>50	Hard	28-40	Thick	High	High	Low.
Bryden	>50	Hard	25-40	Thick	High	High	Low.
21, 22 Carlinton	>60	---	---	---	High	Moderate	Moderate.
23:							
Carlinton	>60	---	---	---	High	Moderate	Moderate.
Talmaks	>60	---	---	---	High	Moderate	Moderate.
24:							
Cavendish	40-60	Soft	---	---	Moderate	Moderate	Moderate.
Taney	>60	---	---	---	High	Moderate	Moderate.
25, 26, 27 Chard	>60	---	---	---	Moderate	High	Low.
28:							
Chard	>60	---	---	---	Moderate	High	Low.
Chard, moist	>60	---	---	---	Moderate	High	Low.
29:							
Chard	>60	---	---	---	Moderate	High	Low.
Tammany	>60	---	---	---	Moderate	Low	Low.
30:							
Chard	>60	---	---	---	Moderate	High	Low.
Urban land.							
31 Cramont	>60	---	---	---	High	High	Moderate.
32:							
Cramont	>60	---	---	---	High	High	Moderate.
Culdesac	>60	---	---	---	High	High	Moderate.
33:							
Cramont	>60	---	---	---	High	High	Moderate.
Seddow	40-55	Hard	---	---	High	Moderate	Moderate.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
34 Crowers	>60	---	---	---	High	Low	Low.
35 Driscoll	>60	---	---	---	High	Moderate	Moderate.
36: Driscoll	>60	---	---	---	High	Moderate	Moderate.
Larkin	>60	---	---	---	High	Moderate	Moderate.
37, 38: Endicott	>50	Hard	28-40	Thick	High	High	Low.
Bryden	>50	Hard	25-40	Thick	High	High	Low.
39: Endicott	>50	Hard	28-40	Thick	High	High	Low.
Oliphant	>60	---	---	---	Moderate	High	Low.
40 Entic Haploxerolls	12-30	Soft	---	---	Moderate	Moderate	Low.
41: Gwin	10-20	Hard	---	---	Moderate	Moderate	Low.
Vollmer	20-40	Hard	---	---	High	Moderate	Low.
42 Haploxerolls	>30	Hard	---	---	High	High	Low.
43 Hooverton	24-40	Hard	---	---	Moderate	Moderate	Low.
44 Immig	26-40	Hard	---	---	Moderate	Moderate	Low.
45, 46 Jacket	>60	---	---	---	Moderate	Moderate	Moderate.
47: Jacket	>60	---	---	---	Moderate	Moderate	Moderate.
Larkin	>60	---	---	---	High	Moderate	Moderate.
48, 49 Joel	>60	---	---	---	High	Moderate	Moderate.
50, 51: Joel	>60	---	---	---	High	Moderate	Moderate.
Setters	>60	---	---	---	High	High	Moderate.
52 Johnson	>60	---	---	---	Moderate	Moderate	Moderate.
53: Johnson	>60	---	---	---	Moderate	Moderate	Moderate.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
53:							
Dragnot	20-40	Hard	---	---	Moderate	Low	Low.
Dragnot, dry	20-40	Hard	---	---	Moderate	Low	Low.
54:							
Johnson	>60	---	---	---	Moderate	Moderate	Moderate.
Kruse	>60	---	---	---	Moderate	Moderate	Moderate.
55:							
Johnson	>60	---	---	---	Moderate	Moderate	Moderate.
Labuck	20-40	Soft	---	---	Moderate	Moderate	Moderate.
56:							
Joseph	>60	---	---	---	Low	Moderate	Low.
Tombeall	>60	---	---	---	High	High	Low.
57:							
Kettenbach	20-40	Hard	---	---	Moderate	Moderate	Low.
Kettenbach, moist	20-40	Hard	---	---	Moderate	Moderate	Low.
Gwin	10-20	Hard	---	---	Moderate	Moderate	Low.
58:							
Kettenbach	20-40	Hard	---	---	Moderate	Moderate	Low.
Keuterville	>60	---	---	---	Moderate	Moderate	Low.
59:							
Kettenbach	20-40	Hard	---	---	Moderate	Moderate	Low.
Rock outcrop.							
60, 61 Keuterville	>60	---	---	---	Moderate	Moderate	Low.
62:							
Keuterville	>60	---	---	---	Moderate	Moderate	Low.
Rock outcrop.							
63, 64 Klickson	>60	---	---	---	High	Moderate	Moderate.
65:							
Klickson	>60	---	---	---	High	Moderate	Moderate.
Agatha	40-60	Hard	---	---	Moderate	Moderate	Moderate.
66:							
Klickson	>60	---	---	---	High	Moderate	Moderate.
Hooverton	24-40	Hard	---	---	Moderate	Moderate	Low.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
67:							
Klickson	>60	---	---	---	High	Moderate	Moderate.
Rock outcrop.							
68:							
Klickson	>60	---	---	---	High	Moderate	Moderate.
Uptmor	40-60	Hard	---	---	High	High	Moderate.
69	>60	---	---	---	Moderate	Moderate	Moderate.
Kruse							
70:							
Lapwai	>60	---	---	---	High	High	Moderate.
Bridgewater	>60	---	---	---	Moderate	Low	Low.
71	20-36	Hard	---	---	Moderate	Moderate	Moderate.
Larabee							
72:							
Larabee	20-36	Hard	---	---	Moderate	Moderate	Moderate.
Gwin	10-20	Hard	---	---	Moderate	Moderate	Low.
73:							
Larabee	20-36	Hard	---	---	Moderate	Moderate	Moderate.
Zaza	10-20	Hard	---	---	Moderate	Low	Moderate.
Seddow	40-55	Hard	---	---	High	Moderate	Moderate.
74:							
Larkin	>60	---	---	---	High	Moderate	Moderate.
Driscoll	>60	---	---	---	High	Moderate	Moderate.
75:							
Latahco	>60	---	---	---	High	High	Low.
Thatuna	>60	---	---	---	High	High	Low.
76:							
Lauby	>60	---	---	---	High	Moderate	Moderate.
Southwick	>60	---	---	---	High	Moderate	Moderate.
77:							
Lickskillet	12-20	Hard	---	---	Moderate	High	Low.
Alpowa	>60	---	---	---	High	High	Moderate.
Rock outcrop.							
78	12-20	Hard	---	---	High	High	Moderate.
Limekiln							

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
79:							
Limekiln	12-20	Hard	---	---	High	High	Moderate.
Crowers	>60	---	---	---	High	Low	Low.
80 Linville	>60	---	---	---	Moderate	High	Low.
81:							
Linville	>60	---	---	---	Moderate	High	Low.
Kettenbach	20-40	Hard	---	---	Moderate	Moderate	Low.
82:							
Linville	>60	---	---	---	Moderate	High	Low.
Waha	20-40	Hard	---	---	High	Moderate	Low.
83:							
Mallory	20-40	Hard	---	---	Moderate	High	Low.
Jacket	>60	---	---	---	Moderate	Moderate	Moderate.
84:							
Maloney	22-36	Hard	---	---	Moderate	Moderate	Moderate.
Zaza	10-20	Hard	---	---	Moderate	Low	Moderate.
85:							
Meland	20-40	Hard	---	---	Moderate	Moderate	Moderate.
Jacket	>60	---	---	---	Moderate	Moderate	Moderate.
86:							
Meland	20-40	Hard	---	---	Moderate	Moderate	Moderate.
Keuterville	>60	---	---	---	Moderate	Moderate	Low.
87:							
Mohler	>60	---	---	---	High	Moderate	Moderate.
Nez Perce	>60	---	---	---	High	High	Low.
Uhlorn	>60	---	---	---	High	Moderate	Moderate.
88 Naff	>60	---	---	---	High	Moderate	Low.
89, 90:							
Naff	>60	---	---	---	High	Moderate	Low.
Palouse	>60	---	---	---	High	Moderate	Low.
91:							
Naff	>60	---	---	---	High	Moderate	Low.
Palouse	>60	---	---	---	High	Moderate	Low.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
92:							
Naff	>60	---	---	---	High	Moderate	Low.
Palouse	>60	---	---	---	High	Moderate	Low.
Garfield	>60	---	---	---	High	Moderate	Low.
93:							
Naff	>60	---	---	---	High	Moderate	Low.
Thatuna	>60	---	---	---	High	High	Low.
94, 95, 96:							
Naff	>60	---	---	---	High	Moderate	Low.
Waha	20-40	Hard	---	---	High	Moderate	Low.
97, 98 Nez Perce	>60	---	---	---	High	High	Low.
99:							
Nez Perce	>60	---	---	---	High	High	Low.
Uhlorn	>60	---	---	---	High	Moderate	Moderate.
100, 101 Oliphant	>60	---	---	---	Moderate	High	Low.
102 Oliphant, gravelly substratum	>60	---	---	---	High	High	Low.
103:							
Oliphant	>60	---	---	---	Moderate	High	Low.
Alpowa	>60	---	---	---	Moderate	High	Low.
104:							
Oliphant	>60	---	---	---	Moderate	High	Low.
Hatwai	>60	---	---	---	High	High	Low.
105:							
Oliphant	>60	---	---	---	High	High	Low.
Stember	20-35	Hard	---	---	High	High	Moderate.
106, 107:							
Palouse	>60	---	---	---	High	Moderate	Low.
Athena	>60	---	---	---	High	High	Low.
108. Pits, gravel							
109 Redmore	>60	---	40-55	Thick	High	High	High.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
110: Riverwash.							
Aquents	>60	---	---	---	Low	High	Moderate.
111: Rock outcrop.							
Flybow	4-10	Hard	---	---	Low	Moderate	Moderate.
112--Seddow	40-55	Hard	---	---	High	Moderate	Moderate.
113--Setters	>60	---	---	---	High	High	Moderate.
114--Shilla	40-60	Hard	---	---	High	Moderate	Moderate.
115: Shilla	40-60	Hard	---	---	High	Moderate	Moderate.
Seddow	40-55	Hard	---	---	High	Moderate	Moderate.
116--Slickpoo	40-55	Hard	---	---	High	High	Low.
117: Slickpoo	40-55	Hard	---	---	High	High	Low.
Broadax	>60	---	---	---	High	High	Low.
118--Southwick	>60	---	---	---	High	Moderate	Moderate.
119: Southwick	>60	---	---	---	High	Moderate	Moderate.
Bluesprin	20-40	Hard	---	---	Moderate	Moderate	Low.
120, 121: Southwick	>60	---	---	---	High	Moderate	Moderate.
Driscoll	>60	---	---	---	High	Moderate	Moderate.
122: Southwick	>60	---	---	---	High	Moderate	Moderate.
Larkin	>60	---	---	---	High	Moderate	Moderate.
123: Sweiting	20-40	Hard	---	---	Moderate	High	Low.
Joel	>60	---	---	---	High	Moderate	Moderate.
124, 125--Talmaks	>60	---	---	---	High	Moderate	Moderate.

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
126:							
Talmaks	>60	---	---	---	High	Moderate	Moderate.
Seddow	40-55	Hard	---	---	High	Moderate	Moderate.
127:							
Tammany	>60	---	---	---	Moderate	Low	Low.
Chard	>60	---	---	---	Moderate	High	Low.
Rock outcrop.							
128 Taney	>60	---	---	---	High	Moderate	Moderate.
129, 130:							
Taney	>60	---	---	---	High	Moderate	Moderate.
Joel	>60	---	---	---	High	Moderate	Moderate.
131, 132:							
Taney	>60	---	---	---	High	Moderate	Moderate.
Setters	>60	---	---	---	High	High	Moderate.
133, 134, 135:							
Thatuna	>60	---	---	---	High	High	Low.
Naff	>60	---	---	---	High	Moderate	Low.
136:							
Thatuna	>60	---	---	---	High	High	Low.
Naff	>60	---	---	---	High	Moderate	Low.
Tilma	>60	---	---	---	High	Moderate	Moderate.
137 Tombeall	>60	---	---	---	High	High	Low.
138, 139, 140 Uhlig	>60	---	---	---	Moderate	Moderate	Moderate.
141 Uhlorn	>60	---	---	---	High	Moderate	Moderate.
142, 143:							
Uhlorn	>60	---	---	---	High	Moderate	Moderate.
Nez Perce	>60	---	---	---	High	High	Low.
144:							
Uhlorn	>60	---	---	---	High	Moderate	Moderate.
Vollmer	20-40	Hard	---	---	High	Moderate	Low.
145:							
Urban land.							

Table 18.--Soil Features--Continued

Soil name and map symbol	Bedrock		Cemented pan		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Thickness		Uncoated steel	Concrete
	In		In				
145:							
Wistona	>60	---	---	---	Moderate	Moderate	Low.
146	>60	---	---	---	Moderate	Low	Moderate.
Uvi							
147, 148	20-40	Hard	---	---	High	Moderate	Low.
Vollmer							
149:							
Watama	20-40	Hard	---	---	Moderate	Moderate	Low.
Flybow	4-10	Hard	---	---	Low	Moderate	Moderate.
150:							
Webbridge	40-60	Hard	---	---	High	Moderate	Moderate.
Agatha	40-60	Hard	---	---	Moderate	Moderate	Moderate.
151:							
Westlake	>60	---	---	---	High	High	Low.
Latahco	>60	---	---	---	High	High	Low.
152	>60	---	---	---	High	Moderate	Moderate.
Wilkins							
153	>60	---	---	---	Moderate	Moderate	Low.
Wistona							
154:							
Zaza	10-20	Hard	---	---	Moderate	Low	Moderate.
Sweiting	20-40	Hard	---	---	Moderate	High	Low.

Table 19.--Classification of the Soils

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Agatha	Loamy-skeletal, mixed, frigid Vitrandic Haploxeralfs
Ahsahka	Fine-loamy, mixed, mesic Typic Argixerolls
Almota	Fine-loamy, mixed, mesic Calcic Haploxerolls
Alpowa	Loamy-skeletal, mixed, mesic Calcic Haploxerolls
Aquents	Aquents
Aquolls	Aquolls
Athena	Fine-silty, mixed, mesic Pachic Haploxerolls
Bakeoven	Loamy-skeletal, mixed, mesic Lithic Haploxerolls
Bluesprin	Loamy-skeletal, mixed, mesic Ultic Argixerolls
Boles	Fine, montmorillonitic, frigid Xeric Argialbolls
Bridgewater	Loamy-skeletal, mixed, mesic Cumulic Haploxerolls
Broadax	Fine-silty, mixed, mesic Calcic Argixerolls
Bryden	Fine-silty, mixed, mesic Typic Durixerolls
Caldwell	Fine-silty, mixed, mesic Cumulic Haploxerolls
Calouse	Fine-silty, mixed, mesic Calcic Pachic Haploxerolls
Carlinton	Fine-silty, mixed, frigid Mollic Fragixeralfs
Cavendish	Fine-loamy, mixed, frigid Ultic Haploxeralfs
Chard	Coarse-loamy, mixed, mesic Calcic Haploxerolls
Cramont	Fine, montmorillonitic, frigid Vitrandic Haploxeralfs
Crowers	Coarse-loamy, mixed, mesic Calcic Pachic Haploxerolls
Culdesac	Ashy over loamy, mixed, frigid Alfic Vitrixerands
Dragnot	Fine-loamy, mixed, mesic Typic Argixerolls
*Driscoll	Fine, montmorillonitic, mesic Ultic Palexerolls
Endicott	Coarse-silty, mixed, mesic Haplic Durixerolls
Entic Haploxerolls	Entic Haploxerolls
Flybow	Loamy-skeletal, mixed, nonacid, mesic Lithic Xerorthents
Garfield	Fine, mixed, mesic Mollic Haploxeralfs
Gwin	Loamy-skeletal, mixed, mesic Lithic Argixerolls
Haploxerolls	Haploxerolls
Hatwai	Fine-silty, mixed, mesic Typic Natrixerolls
Hooverton	Loamy-skeletal, mixed, mesic Typic Argixerolls
Immig	Clayey-skeletal, montmorillonitic, mesic Typic Argixerolls
*Jacket	Fine, montmorillonitic, mesic Pachic Ultic Argixerolls
Joel	Fine-silty, mixed, frigid Boralfic Argixerolls
Johnson	Fine-loamy, mixed, frigid Ultic Argixerolls
Joseph	Sandy-skeletal, mixed, mesic Aquic Xerofluvents
Kettenbach	Loamy-skeletal, mixed, mesic Pachic Argixerolls
Keuterville	Loamy-skeletal, mixed, mesic Ultic Argixerolls
Klickson	Loamy-skeletal, mixed, frigid Vitrandic Argixerolls
Kruse	Fine-loamy, mixed, frigid Vitrandic Haploxeralfs
*Labuck	Coarse-loamy, mixed, frigid Vitrandic Xerochrepts
Lapwai	Coarse-loamy, mixed, mesic Cumulic Haploxerolls
Larabee	Loamy-skeletal, mixed, frigid Vitrandic Argixerolls
Larkin	Fine-silty, mixed, mesic Ultic Argixerolls
Latah	Fine, mixed, mesic Xeric Argialbolls
Latahco	Fine-silty, mixed, frigid Argiaquic Xeric Argialbolls
Lauby	Fine-loamy, mixed, mesic Pachic Ultic Argixerolls
Lickskillet	Loamy-skeletal, mixed, mesic Lithic Haploxerolls
Limekiln	Loamy-skeletal, mixed, mesic Lithic Haploxerolls
Linville	Fine-loamy, mixed, mesic Pachic Haploxerolls
Mallory	Clayey-skeletal, montmorillonitic, mesic Pachic Argixerolls
Maloney	Fine-loamy, mixed, frigid Typic Xerochrepts
Meland	Fine-loamy, mixed, mesic Ultic Argixerolls
Mohler	Fine-silty, mixed, mesic Pachic Argixerolls
Naff	Fine-silty, mixed, mesic Ultic Argixerolls
Nez Perce	Fine, montmorillonitic, mesic Xeric Argialbolls
Oliphant	Coarse-silty, mixed, mesic Calcic Pachic Haploxerolls

Table 19.--Classification of the Soils--Continued

Soil name	Family or higher taxonomic class
*Palouse	Fine-silty, mixed, mesic Pachic Ultic Haploxerolls
Redmore	Fine, montmorillonitic, mesic Typic Natrixerolls
Seddow	Fine-loamy, mixed, frigid Vitrandic Haploxeralfs
*Setters	Fine, montmorillonitic, frigid Ultic Palexerolls
Shilla	Ashy over loamy-skeletal, mixed, frigid Alfic Vitrixerands
Slickpoo	Fine-loamy, mixed, mesic Calcic Pachic Argixerolls
Southwick	Fine-silty, mixed, mesic Boralfic Argixerolls
Stember	Loamy-skeletal, mixed, mesic Typic Calcixerolls
Sweiting	Fine, montmorillonitic, frigid Pachic Ultic Argixerolls
Talmaks	Fine-silty, mixed, frigid Vitrandic Haploxeralfs
Tammany	Loamy-skeletal, mixed, mesic Calcic Haploxerolls
Taney	Fine-silty, mixed, frigid Vitrandic Argixerolls
Thatuna	Fine-silty, mixed, mesic Boralfic Argixerolls
Tilma	Fine, mixed, mesic Xeric Argialbolls
Tombeall	Coarse-loamy, mixed, mesic Cumulic Haploxerolls
Uhlig	Coarse-loamy, mixed, mesic Pachic Haploxerolls
Uhlorn	Fine-silty, mixed, mesic Typic Argixerolls
Uptmor	Fine, montmorillonitic, frigid Ultic Argixerolls
Uvi	Fine-loamy, mixed, frigid Vitrandic Xerochrepts
Vollmer	Fine-loamy, mixed, mesic Typic Argixerolls
Waha	Fine-loamy, mixed, mesic Pachic Argixerolls
Watama	Fine-loamy, mixed, mesic Pachic Haploxerolls
Webbridge	Ashy over loamy-skeletal, mixed Alfic Vitricryands
Westlake	Fine-silty, mixed, frigid Cumulic Ultic Haploxerolls
Wilkins	Fine, montmorillonitic, frigid Xeric Argialbolls
Wistona	Coarse-loamy, mixed, mesic Fluventic Haploxerolls
Zaza	Loamy-skeletal, mixed, frigid Lithic Xerochrepts

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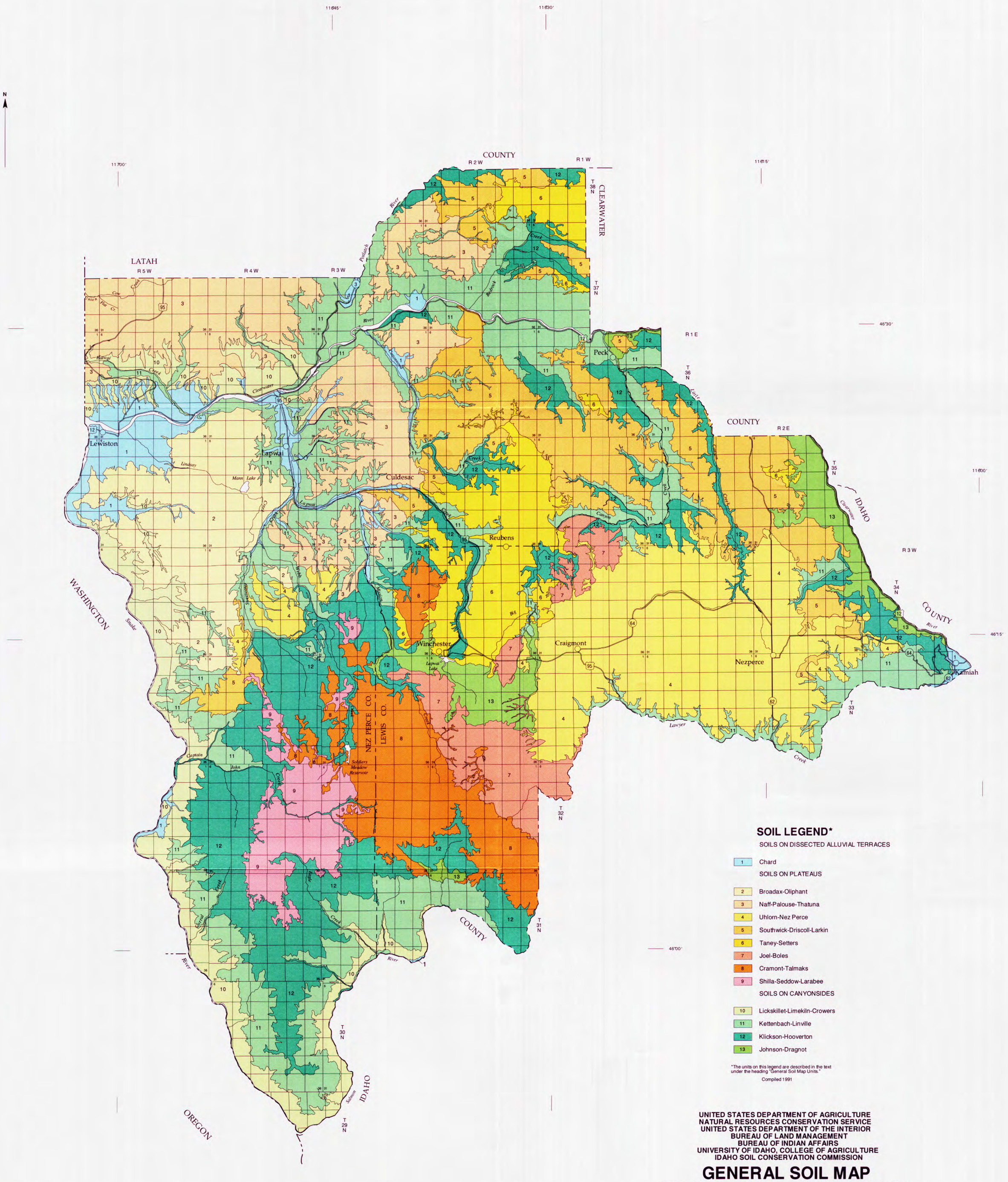


SOIL LEGEND*

SOILS ON DISSECTED ALLUVIAL TERRACES

1 Chard

SOILS ON PLATEAUS

2 Broadax-Oliphant
3 Naff-Palouse-Thatuna
4 Uhlorn-Nez Perce
5 Southwick-Driscoll-Larkin
6 Taney-Setters
7 Joel-Boles
8 Cramont-Talmaks
9 Shilla-Seddow-Larabee

SOILS ON CANYONSIDES

10 Lickskillet-Limekiln-Crowers
11 Kettenbach-Linville
12 Klickson-Hooverton
13 Johnson-Dragnot

*The units on this legend are described in the text under the heading "General Soil Map Units."

Compiled 1991

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each area outlined on this map consists of more than one kind of soil. The map is meant for general planning rather than a basis for decisions on the use of specific tracts.

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
BUREAU OF INDIAN AFFAIRS
UNIVERSITY OF IDAHO, COLLEGE OF AGRICULTURE
IDAHO SOIL CONSERVATION COMMISSION

GENERAL SOIL MAP
LEWIS & NEZ PERCE COUNTIES, IDAHO

Scale 1:180000

5 0 5
MILES

10 0 10
KILOMETERS

INDEX TO MAP SHEETS
LEWIS & NEZ PERCE COUNTIES, IDAHO

Scale 1:180000

5 0 5 MILES

10 0 10 KILOMETERS

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

SOIL LEGEND

This is an Order 2 soil survey on lands used dominantly for cropland, pastureland, and urbanland and an Order 3 soil survey on lands used for rangeland and woodland. The publication symbols for the map units are numerical. They correspond to the alphabetical list of map units.

SYMBOL	NAME
1	Agatha loam, 15 to 40 percent slopes
2	Agatha loam, 40 to 75 percent slopes
3	Agatha-Rock outcrop complex, 35 to 75 percent slopes
4	Ahsahka loam, 15 to 40 percent slopes
5	Almota-Athena-Hatwai complex, 45 to 65 percent slopes
6	Almota-Linville complex, 30 to 50 percent slopes
7	Alpowa-Lickskillet complex, 15 to 35 percent slopes
8	Alpowa-Lickskillet complex, 35 to 50 percent slopes
9	Aquolls, nearly level
10	Athena silt loam, 20 to 45 percent slopes
11	Bakeoven-Watama complex, 10 to 35 percent slopes
12	Boles-Joel complex, 1 to 8 percent slopes
13	Bridgewater-Joseph complex, 1 to 3 percent slopes
14	Broadax silt loam, 2 to 8 percent slopes
15	Broadax silt loam, 8 to 20 percent slopes
16	Broadax-Hatwai complex, 1 to 8 percent slopes
17	Broadax-Hatwai complex, 8 to 15 percent slopes
18	Caldwell-Latah complex, 0 to 3 percent slopes
19	Calouse-Almota complex, 2 to 15 percent slopes
20	Calouse-Endicott-Bryden complex, 2 to 6 percent slopes
21	Carlinton silt loam, 2 to 10 percent slopes
22	Carlinton silt loam, 10 to 20 percent slopes
23	Carlinton-Talmaks complex, 2 to 8 percent slopes
24	Cavendish-Taney complex, 8 to 20 percent slopes
25	Chard silt loam, 2 to 10 percent slopes
26	Chard silt loam, 10 to 25 percent slopes
27	Chard silt loam, 25 to 45 percent slopes
28	Chard complex, 30 to 50 percent slopes
29	Chard-Tammany complex, 20 to 45 percent slopes
30	Chard-Urban land complex, gently sloping
31	Cramont silt loam, 2 to 10 percent slopes
32	Cramont-Culdesac complex, 2 to 20 percent slopes
33	Cramont-Seddow complex, 10 to 25 percent slopes
34	Crowers silt loam, 50 to 80 percent slopes
35	Driscoll silt loam, 3 to 12 percent slopes
36	Driscoll-Larkin complex, 2 to 10 percent slopes
37	Endicott-Bryden complex, 2 to 6 percent slopes
38	Endicott-Bryden complex, 6 to 12 percent slopes
39	Endicott-Oliphant complex, 8 to 20 percent slopes
40	Entic Haploxerolls, very steep
41	Gwin-Vollmer complex, 5 to 25 percent slopes
42	Haploxerolls, rolling
43	Hooverton stony loam, 35 to 75 percent slopes
44	Immig very stony clay loam, 40 to 80 percent slopes
45	Jacket silt loam, 3 to 12 percent slopes
46	Jacket silt loam, 12 to 30 percent slopes
47	Jacket-Larkin complex, 20 to 50 percent slopes
48	Joel silt loam, 1 to 8 percent slopes
49	Joel silt loam, 8 to 16 percent slopes
50	Joel-Setters complex, 2 to 10 percent slopes
51	Joel-Setters complex, 10 to 20 percent slopes
52	Johnson loam, 45 to 65 percent slopes
53	Johnson-Dragnot association, 40 to 70 percent slopes
54	Johnson-Kruse complex, 5 to 40 percent slopes
55	Johnson-Labuck complex, 15 to 35 percent slopes
56	Joseph-Tombeall complex, 0 to 2 percent slopes, occasionally flooded
57	Kettenbach-Gwin complex, 35 to 75 percent slopes
58	Kettenbach-Keuterville association, 35 to 75 percent slopes
59	Kettenbach-Rock outcrop complex, 45 to 90 percent slopes
60	Keuterville gravelly silt loam, 10 to 25 percent slopes
61	Keuterville gravelly silt loam, 25 to 50 percent slopes
62	Keuterville-Rock outcrop complex, 35 to 90 percent slopes
63	Klickson silt loam, 15 to 35 percent slopes
64	Klickson silt loam, 35 to 90 percent slopes
65	Klickson-Agatha association, 35 to 75 percent slopes
66	Klickson-Hooverton association, 35 to 90 percent slopes
67	Klickson-Rock outcrop complex, 45 to 90 percent slopes
68	Klickson-Uptmor complex, 15 to 45 percent slopes
69	Kruse loam, 20 to 35 percent slopes
70	Lapwai-Bridgewater complex, 1 to 4 percent slopes
71	Larabee loam, 4 to 20 percent slopes
72	Larabee-Gwin association, 35 to 75 percent slopes
73	Larabee-Zaza-Seddow complex, 10 to 40 percent slopes
74	Larkin-Driscoll complex, 10 to 20 percent slopes
75	Latahco-Thatuna complex, 0 to 3 percent slopes
76	Lauby-Southwick complex, 15 to 35 percent slopes
77	Lickskillet-Alpowa-Rock outcrop complex, 50 to 75 percent slopes
78	Limekiln very stony silt loam, 40 to 60 percent slopes
79	Limekiln-Crowers association, 45 to 80 percent slopes
80	Linville silt loam, 40 to 70 percent slopes
81	Linville-Kettenbach association, 45 to 75 percent slopes
82	Linville-Waha complex, 25 to 45 percent slopes
83	Mallory-Jacket complex, 10 to 40 percent slopes
84	Maloney-Zaza complex, 5 to 20 percent slopes
85	Meland-Jacket complex, 5 to 20 percent slopes
86	Meland-Keuterville complex, 10 to 35 percent slopes
87	Mohler-Nez Perce-Uhlorn complex, 2 to 10 percent slopes
88	Naff silt loam, 20 to 30 percent slopes
89	Naff-Palouse complex, 2 to 8 percent slopes
90	Naff-Palouse complex, 8 to 20 percent slopes
91	Naff, eroded-Palouse complex, 8 to 20 percent slopes
92	Naff-Palouse-Garfield complex, 8 to 20 percent slopes
93	Naff-Thatuna complex, 2 to 10 percent slopes
94	Naff-Waha complex, 3 to 12 percent slopes
95	Naff-Waha complex, 12 to 25 percent slopes
96	Naff-Waha complex, 25 to 40 percent slopes
97	Nez Perce silty clay loam, 2 to 10 percent slopes
98	Nez Perce silty clay loam, dry, 1 to 4 percent slopes
99	Nez Perce-Uhlorn complex, 8 to 15 percent slopes
100	Oliphant silt loam, 1 to 4 percent slopes
101	Oliphant silt loam, 8 to 20 percent slopes
102	Oliphant silt loam, gravelly substratum, 2 to 6 percent slopes
103	Oliphant-Alpowa complex, 20 to 40 percent slopes
104	Oliphant-Hatwai complex, 1 to 8 percent slopes
105	Oliphant-Stember complex, 8 to 20 percent slopes
106	Palouse-Athena complex, 2 to 8 percent slopes
107	Palouse-Athena complex, 8 to 20 percent slopes
108	Pits, gravel
109	Redmore silt loam, 1 to 6 percent slopes
110	Riverwash-Aquents complex, nearly level
111	Rock outcrop-Flybow complex, very steep
112	Seddow silt loam, 10 to 40 percent slopes
113	Setters silt loam, 2 to 8 percent slopes
114	Shilla silt loam, 2 to 12 percent slopes
115	Shilla-Seddow complex, 5 to 30 percent slopes
116	Slickpoo silt loam, 5 to 15 percent slopes
117	Slickpoo-Broadax complex, 15 to 25 percent slopes
118	Southwick silt loam, 3 to 12 percent slopes
119	Southwick-Bluesprin complex, 10 to 35 percent slopes
120	Southwick-Driscoll complex, 3 to 12 percent slopes
121	Southwick-Driscoll complex, 12 to 25 percent slopes
122	Southwick-Larkin complex, 12 to 25 percent slopes
123	Sweiting-Joel complex, 4 to 20 percent slopes
124	Talmaks silt loam, 2 to 8 percent slopes
125	Talmaks silt loam, 8 to 20 percent slopes
126	Talmaks-Seddow complex, 8 to 20 percent slopes
127	Tammany-Chard-Rock outcrop complex, 35 to 65 percent slopes
128	Taney silt loam, 3 to 10 percent slopes
129	Taney-Joel complex, 10 to 20 percent slopes
130	Taney-Joel complex, 20 to 40 percent slopes
131	Taney-Setters complex, 3 to 8 percent slopes
132	Taney-Setters complex, 8 to 20 percent slopes
133	Thatuna-Naff complex, 10 to 25 percent slopes
134	Thatuna-Naff, eroded complex, 10 to 25 percent slopes
135	Thatuna-Naff complex, 25 to 40 percent slopes
136	Thatuna-Naff-Tilma complex, 10 to 25 percent slopes
137	Tombeall silt loam, 0 to 4 percent slopes
138	Uhlig silt loam, 2 to 8 percent slopes
139	Uhlig silt loam, 8 to 20 percent slopes
140	Uhlig silt loam, 20 to 35 percent slopes
141	Uhlorn silt loam, 8 to 20 percent slopes
142	Uhlorn-Nez Perce complex, 2 to 10 percent slopes
143	Uhlorn-Nez Perce complex, 10 to 20 percent slopes
144	Uhlorn-Vollmer complex, 8 to 20 percent slopes
145	Urban land-Wistona complex, nearly level
146	Uvi silt loam, 35 to 75 percent slopes
147	Vollmer silt loam, 3 to 10 percent slopes
148	Vollmer silt loam, 10 to 20 percent slopes
149	Watama-Flybow complex, 10 to 35 percent slopes
150	Webbridge-Agatha association, 35 to 75 percent slopes
151	Westlake-Latahco complex, 0 to 3 percent slopes
152	Wilkins silt loam, 0 to 5 percent slopes
153	Wistona very fine sandy loam, 0 to 3 percent slopes
154	Zaza-Sweiting complex, 4 to 20 percent slopes
155	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state, or province

County or parish

Field sheet matchline and neatline

LAND DIVISION CORNER (sections and land grants)

ROADS

Divided (median shown if scale permits)

ROAD EMBLEM & DESIGNATIONS

Federal

State

DAMS

Medium or Small (Named where applicable)

PITS

Gravel pit

Mine or quarry

WATER FEATURES

DRAINAGE

Perennial, double line

Perennial, single line

MISCELLANEOUS WATER FEATURES

Wet spot

Spring

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

Other than bedrock (points down slope)

SHORT STEEP SLOPE

MISCELLANEOUS

Clay spot

Gravelly spot

Prominent hill or peak

Rock outcrop (includes sandstone and shale)

Severely eroded spot

Very stony spot

Small Benches

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LITTLE BEAR RIDGE QUADRANGLE
SHEET NUMBER 1 OF 46

116° 45′ 00″ — 116° 42′ 30″ — 116° 40′ 00″ — 116° 37′ 30″

46° 45′ 00″
46° 42′ 30″
46° 40′ 00″
46° 37′ 30″

T38N
R2W
19

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1990 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 1

QUADRANGLE LOCATION

LITTLE BEAR RIDGE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 1 OF 46

1	2	3
4		5
6	7	8

1 MOSCOW MOUNTAIN
2 STANFORD
3 DEARY
4 TROY
5 TEXAS RIDGE
6 GREEN KNOB
7 JULIAETTA
8 LENORE

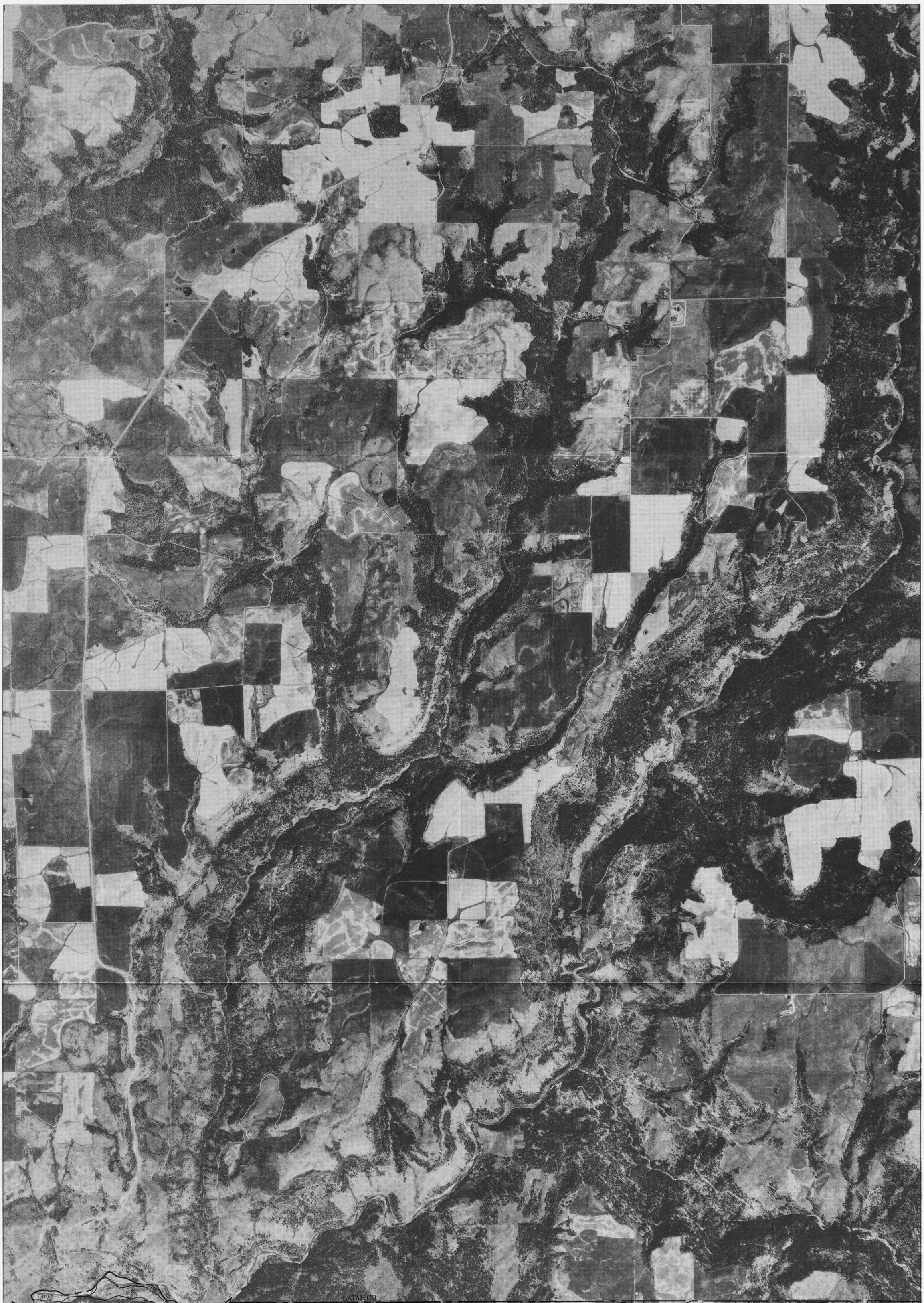
INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
TEXAS RIDGE QUADRANGLE
SHEET NUMBER 2 OF 46

116° 37′ 30″ — 116° 35′ 00″ — 116° 32′ 30″ — 116° 30′ 00″

46° 45′ 00″ — 46° 42′ 30″ — 46° 40′ 00″ — 46° 37′ 30″



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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 70000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 2

QUADRANGLE LOCATION

TEXAS RIDGE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 2 OF 46

1	2	3
4		5
6	7	8

1 STANFORD
2 DEARY
3 BOVILL
4 LITTLE BEAR RIDGE
5 PARK
6 JULIAETTA
7 LENORE
8 SOUTHWICK

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
PARK QUADRANGLE
SHEET NUMBER 3 OF 46

116° 30′ 00″ — 116° 27′ 30″ — 116° 25′ 00″ — 116° 22′ 30″

46° 45′ 00″ — 46° 42′ 30″ — 46° 40′ 00″ — 46° 37′ 30″

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 3

QUADRANGLE LOCATION

PARK, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 3 OF 46

1	2	3
4		5
6	7	8

1 DEARY
2 BOVILL
3 MCGARY BUTTE
4 TEXAS RIDGE
5 ALDERMAND RIDGE
6 LENORE
7 SOUTHWICK
8 AHSAHKA

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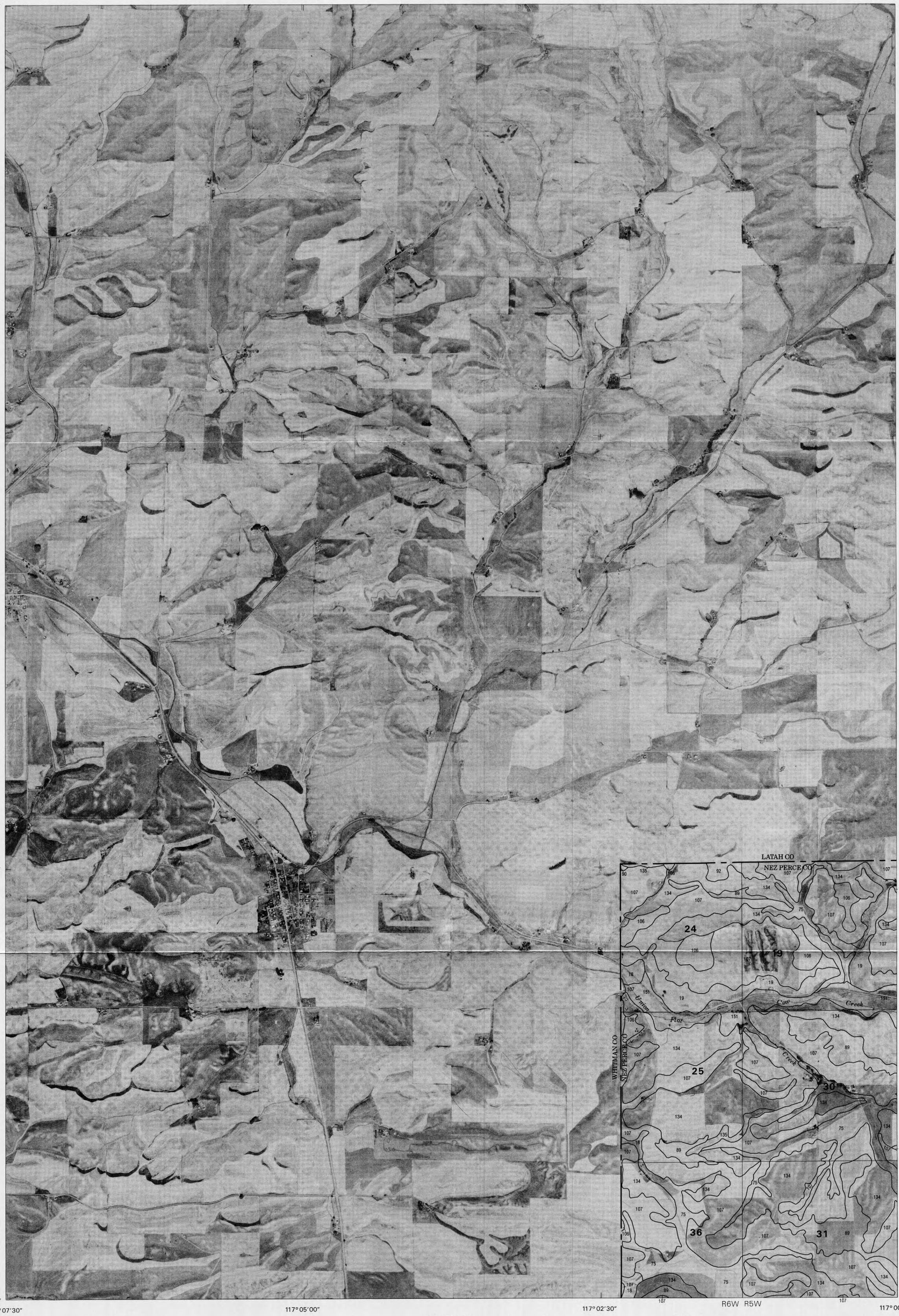
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
UNIONTOWN QUADRANGLE
SHEET NUMBER 4 OF 46

117°07'30" 117°05'00" 117°02'30" 117°00'00"

46°37'30" 46°35'00" 46°32'30" 46°30'00"



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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

QUADRANGLE LOCATION

UNIONTOWN, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 4 OF 46

1	2	3
4		5
6	7	8

1 PULLMAN
2 MOSCOW WEST
3 MOSCOW EAST
4 COLTON
5 GENESEE
6 SILCOTT ISLAND
7 CLARKSTON
8 LEWISTON ORCHARDS NORTH

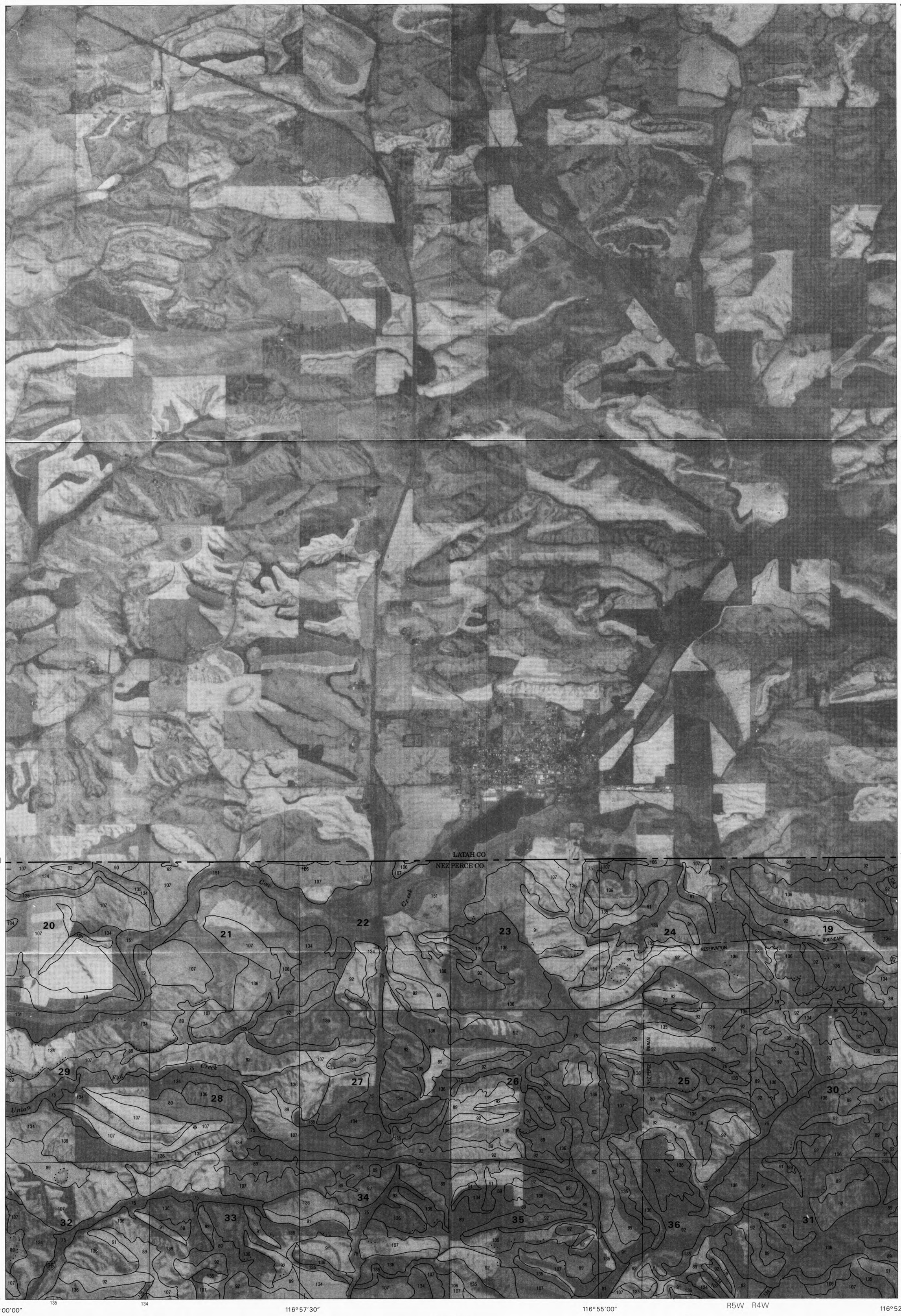
INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
GENESEE QUADRANGLE
SHEET NUMBER 5 OF 46

117° 00′ 00″ — 116° 57′ 30″ — 116° 55′ 00″ — 116° 52′ 30″

46° 37′ 30″ — 46° 35′ 00″ — T37N 46° 32′ 30″ — 46° 30′ 00″



R5W R4W

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 5

QUADRANGLE LOCATION

1	2	3	1 MOSCOW WEST 2 MOSCOW EAST 3 TROY
4		5	4 UNIONTOWN 5 GREEN KNOB 6 CLARKSTON
6	7	8	7 LEWISTON ORCHARDS NORTH 8 LAPWAI

INDEX TO ADJOINING 7.5 MAPS

GENESEE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 5 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
GREEN KNOB QUADRANGLE
SHEET NUMBER 6 OF 46

116°52'30" 116°50'00" 116°47'30" 116°45'00"
46°37'30" 46°35'00" 46°32'30" 46°30'00"

R4W R3W

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 6

QUADRANGLE LOCATION

GREEN KNOB, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 6 OF 46

1	2	3	1 MOSCOW EAST 2 TROY 3 LITTLE BEAR RIDGE
4		5	4 GENESEE 5 JULIAETTA 6 LEWISTON ORCHARDS NORTH
6	7	8	7 LAPWAI 8 CULDESAC NORTH

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
JULIAETTA QUADRANGLE
SHEET NUMBER 7 OF 46

116° 45′ 00″ — 116° 42′ 30″ — 116° 40′ 00″ — 116° 37′ 30″
46° 37′ 30″ — 46° 35′ 00″ — 46° 32′ 30″ — 46° 30′ 00″

T38N
T37N

R3W R2W

Kendrick
Leland Cemetery
Potlatch
Ridge
Fir Island
Cherrylane

LATAH CO
NEZ PERCE CO

NEZ PERCE INDIAN RESERVATION BOUNDARY

POTLATCH RIVER
RIDGE
Waunchee Gulch
Little Potlatch Creek
Hatter Creek
Hubbard Gulch
Fire Creek
CLEARWATER RIVER

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 7

QUADRANGLE LOCATION

1	2	3	1 TROY 2 LITTLE BEAR RIDGE 3 TEXAS RIDGE
4		5	4 GREEN KNOB 5 LENORE 6 LAPWAI
6	7	8	7 CULDESAC NORTH 8 GIFFORD

INDEX TO ADJOINING 7.5 MAPS

JULIAETTA, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 7 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LENORE QUADRANGLE
SHEET NUMBER 8 OF 46

116°37′30″ 116°35′00″ 116°32′30″ R2W R1W 116°30′00″

46°37′30″ 46°35′00″ 46°32′30″ 46°30′00″

T38N T37N T36N

Cameron Leland Agatha Willola Lenore Amos Bench

Pine Creek Potlatch Ridge Bedrock Creek Louse Creek Cream Ridge Lower Cream Ridge Wauconda Gulch Canyon Creek Rattlesnake Point

NEZ PERCE INDIAN RESERVATION BOUNDARY

CLEARWATER RIVER

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 8

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 LITTLE BEAR RIDGE
2 TEXAS RIDGE
3 PARK
4 JULIAETTA
5 SOUTHWICK
6 CULDESAC NORTH
7 GIFFORD
8 PECK

INDEX TO ADJOINING 7.5 MAPS

LENORE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 8 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
SOUTHWICK QUADRANGLE
SHEET NUMBER 9 OF 46

116° 30′ 00″ — 116° 27′ 30″ — 116° 25′ 00″ — 116° 22′ 30″
46° 37′ 30″ — 46° 35′ 00″ — 46° 32′ 30″ — 46° 30′ 00″

T38N
T37N
T37N
T36N

NEZ PERCE CO
CLEARWATER CO

POTLATCH
Southwick
RIDGE
Bedrock
Creek
INDIAN
RESERVATION
BOUNDARY
NEZ PERCE
Louse
CREAM
RIDGE
Creek
CLEARWATER
RIVER

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1990 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 9

QUADRANGLE LOCATION

1	2	3	1 TEXAS RIDGE 2 PARK 3 ALDERMAND RIDGE
4		5	4 LENORE 5 AHSAHKA 6 GIFFORD
6	7	8	7 PECK 8 OROFINO WEST

INDEX TO ADJOINING 7.5 MAPS

SOUTHWICK, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 9 OF 46

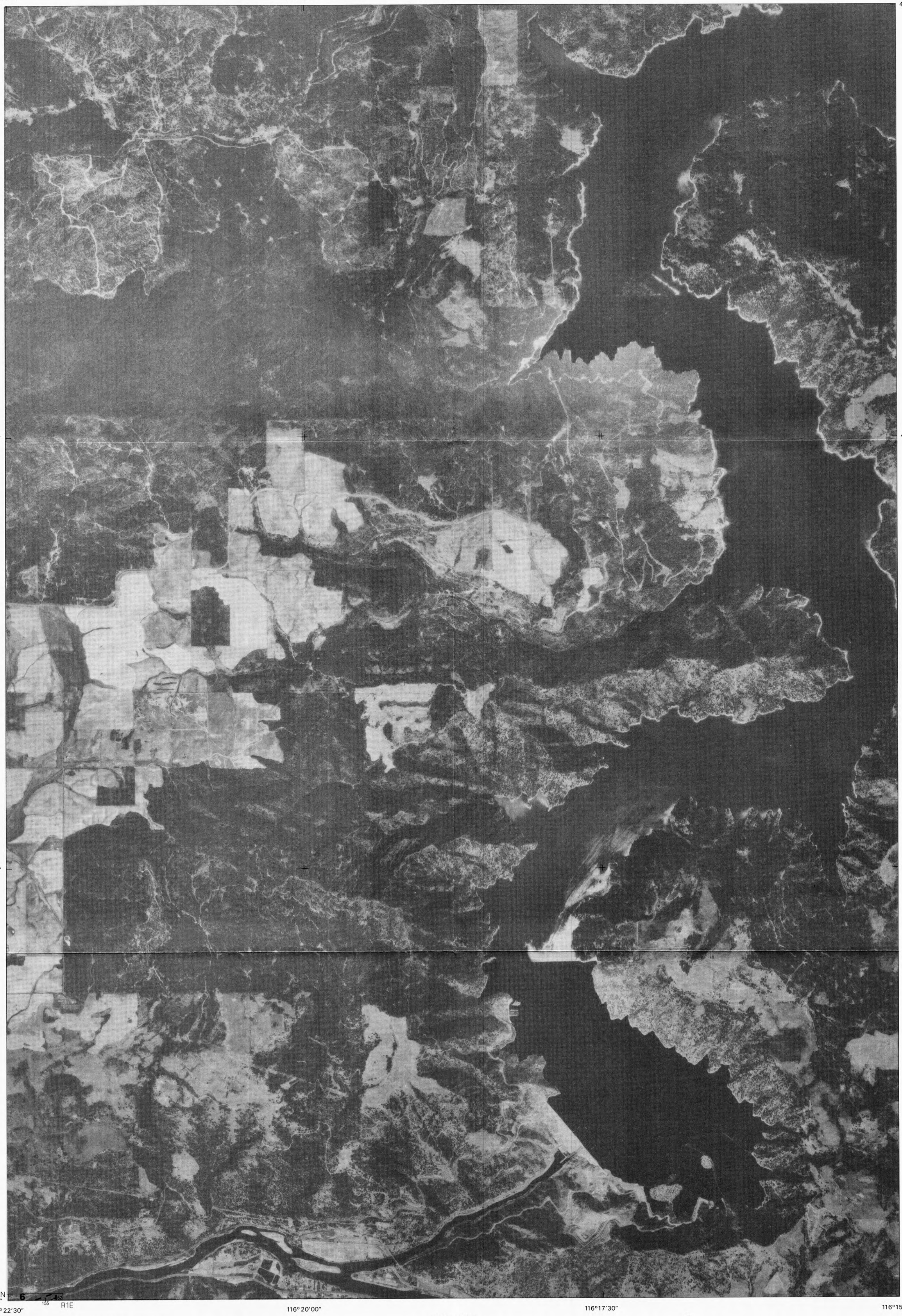
R1W R1E

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
AHSAHKA QUADRANGLE
SHEET NUMBER 10 OF 46

116°22′30″ 116°20′00″ 116°17′30″ 116°15′00″

46°37′30″ 46°35′00″ 46°32′30″ 46°30′00″



T36N R1E

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SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 10

QUADRANGLE LOCATION

1	2	3	1 PARK 2 ALDERMAND RIDGE 3 ELK CREEK FALLS
4		5	4 SOUTHWICK 5 DENT 6 PECK
6	7	8	7 OROFINO WEST 8 OROFINO EAST

INDEX TO ADJOINING 7.5 MAPS

AHSAHKA, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 10 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CLARKSTON QUADRANGLE
SHEET NUMBER 11 OF 46

117°07′30″ 117°05′00″ 117°02′30″ R6W R5W 117°00′00″

46°30′00″ 46°27′30″ 46°25′00″ 46°22′30″

T36N T35N

WHITMAN CO
NEZ PERCE CO
ASOTIN CO
NEZ PERCE CO
WASHINGTON
IDAHO

CLARKSTON LEWISTON

CLEARWATER RIVER SNAKE RIVER

Hatwai Creek

North Lewiston

Lewiston Orchards

Sections: 36, 31, 1, 6, 12, 7, 13, 18, 24, 19, 25, 30, 36, 31, 1, 6, 12, 7, 13, 18, 14

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 11

QUADRANGLE LOCATION

1	2	3	1 COLTON 2 UNIONTOWN 3 GENESSE
4		5	4 SILCOTT ISLAND 5 LEWISTON ORCHARDS NORTH 6 ROCKPILE CREEK
6	7	8	7 ASTON 8 LEWISTON ORCHARDS SOUTH

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CLARKSTON, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 11 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LEWISTON ORCHARDS NORTH QUADRANGLE
SHEET NUMBER 12 OF 46

117°00'00" 116°57'30" 116°55'00" 116°52'30"
46°30'00" 46°27'30" 46°25'00" 46°22'30"
T36N T35N
R5W R4W

Lewiston Hill
Hatwai Creek
Cole Canyon
NEZ PERCE INDIAN RESERVATION
CLEARWATER RIVER
North Lewiston
LEWISTON
Lindsey Creek
Lewiston Orchards

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000
FEET
1 0 1
KILOMETERS
NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 12

QUADRANGLE LOCATION

LEWISTON ORCHARDS NORTH, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 12 OF 46

1	2	3
4		5
6	7	8

1 UNIONTOWN
2 GENESEE
3 GREEN KNOB
4 CLARKSTON
5 LAPWAI
6 ASOTIN
7 LEWISTON ORCHARDS SOUTH
8 SWEETWATER

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LAPWAI QUADRANGLE
SHEET NUMBER 13 OF 46

116°52′30″ 116°50′00″ 116°47′30″ R4W R3W 116°45′00″

46°30′00″ T36N

46°27′30″

46°25′00″ T36N T35N

46°22′30″

Howard Gulch
POTLATCH RIVER
Catholic Creek
Beavy Gulch
Coyote Gulch
Cole Gulch
Canyon
Hog Island
CLEARWATER RIVER
Arrow
Lapwai Creek
North Fork
South Fork
Tom Beall Creek
Lapwai
Garden Gulch
Lyle Gulch
CANYON
SOLDIERS
BEAVER
Mann Lake
Sweetwater Creek
NEZ PERCE INDIAN RESERVATION BOUNDARY

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 13

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 GENESEE
2 GREEN KNOB
3 JULIAETTA
4 LEWISTON ORCHARDS NORTH
5 CULDESAC NORTH
6 LEWISTON ORCHARDS SOUTH
7 SWEETWATER
8 CULDESAC SOUTH

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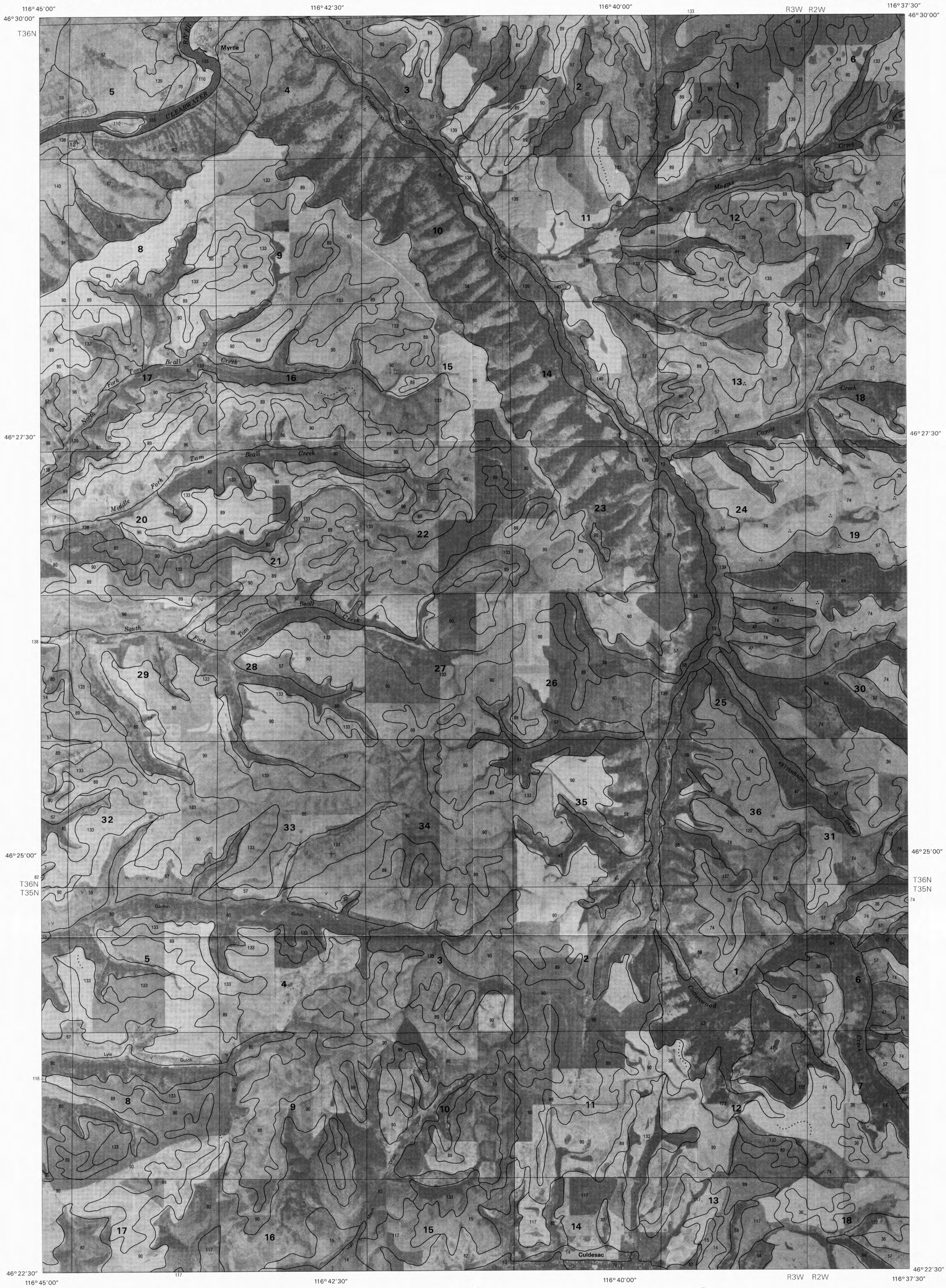
LAPWAI, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 13 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CULDESAC NORTH QUADRANGLE
SHEET NUMBER 14 OF 46



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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 14

QUADRANGLE LOCATION

CULDESAC NORTH, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 14 OF 46

1	2	3
4		5
6	7	8

1 GREEN KNOB
2 JULIAETTA
3 LENORE
4 LAPWAI
5 GIFFORD
6 SWEETWATER
7 CULDESAC SOUTH
8 REUBENS

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
GIFFORD QUADRANGLE
SHEET NUMBER 15 OF 46

116°37'30" 116°35'00" 116°32'30" 116°30'00"
46°30'00" 46°27'30" 46°25'00" 46°22'30"
R2W R1W
T36N T35N

Magpie Creek
Rattlesnake Canyon
Jay Ellis
Angle
Ridge
Creek
Summit
Coyote Creek
Gifford
Cottonwood Creek
Star Mill Creek
Pickle Canyon
Cottonwood Creek

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES
1000 0 1000 2000 3000 4000000 5000 6000 7000
FEET
1 0 1
KILOMETERS
NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 15

QUADRANGLE LOCATION

GIFFORD, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 15 OF 46

1	2	3
4		5
6	7	8

1 JULIAETTA
2 LENORE
3 SOUTHWICK
4 CULDESAC NORTH
5 PECK
6 CULDESAC SOUTH
7 REUBENS
8 FLETCHER

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
PECK QUADRANGLE
SHEET NUMBER 16 OF 46

116°30′00″ 116°27′30″ 116°25′00″ R1W R1E 116°22′30″
46°30′00″ 46°27′30″ 46°25′00″ 46°22′30″
T36N T35N

NEZ PERCE CO
CLEARWATER CO
CLEARWATER RIVER
Harpers Bend
Big Canyon
ANGEL RIDGE
Jacks Creek
Little Canyon Creek
Central Ridge
BOISE MERIDIAN
Sixmile Canyon
Good Hope Church
Melrose
Peck
Nichols Canyon
LEWIS CO
Limit Soil Survey

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1990 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000
FEET
1 0 1
KILOMETERS
NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 16

QUADRANGLE LOCATION

1	2	3	1 LENORE 2 SOUTHWICK 3 AHSAHKA
4		5	4 GIFFORD 5 OROFINO WEST 6 REUBENS
6	7	8	7 FLETCHER 8 MOHLER

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PECK, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 16 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
OROFINO WEST QUADRANGLE
SHEET NUMBER 17 OF 46

116°22'30" 116°20'00" 116°17'30" 116°15'00"

46°30'00" 46°27'30" 46°25'00" 46°22'30"

T36N T35N

NEZ PERCE CO
CLEARWATER CO
LEWIS CO
NEZ PERCE CO
LEWIS CO
LEWIS CO
NEZ PERCE CO
CLEARWATER CO
LEWIS CO

Little Canyon Creek
Canyon Creek
Big Canyon Creek
Little Canyon Creek
Central Ridge Cem
CENTRAL RIDGE

R1E R2E

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1990 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 17

QUADRANGLE LOCATION

1	2	3	1 SOUTHWICK 2 AHSAHKA 3 DENT
4		5	4 PECK 5 OROFINO EAST 6 FLETCHER
6	7	8	7 MOHLER 8 SIXMILE CREEK

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OROFINO WEST, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 17 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
OROFINO EAST QUADRANGLE
SHEET NUMBER 18 OF 46

116°15′00″ 116°12′30″ 116°10′00″ 116°07′30″

46°30′00″ 46°27′30″ 46°25′00″ 46°22′30″

CLEARWATER CO
LEWIS CO

T35N

R2E

CLEARWATER RIVER

LEWIS CO
CLEARWATER CO

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 18

QUADRANGLE LOCATION

OROFINO EAST, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 18 OF 46

1	2	3
4		5
6	7	8

1 AHSAHKA
2 DENT
3 GRANGEMONT
4 OROFINO WEST
5 RUDO
6 MOHLER
7 SIXMILE CREEK
8 WOODLAND

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
ASOTIN QUADRANGLE
SHEET NUMBER 19 OF 46

117°07′30″ 117°05′00″ 117°02′30″ 117°00′00″
46°22′30″ 46°20′00″ 46°17′30″ 46°15′00″

R6W R5W
T35N
T34N

Tammany Creek
Tenmile Rapids
ASOTIN CO
NEZ PERCE CO
SNAKE R
IDAHO
WASHINGTON

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 19

QUADRANGLE LOCATION

1	2	3	1 SILCOTT ISLAND 2 CLARKSTON 3 LEWISTON ORCHARDS NORTH
4		5	4 ROCKPILE CREEK 5 LEWISTON ORCHARDS SOUTH
6	7	8	6 ANATONE 7 WEISSENFELS RIDGE 8 CAPTAIN JOHN RAPIDS

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ASOTIN, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 19 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LEWISTON ORCHARDS SOUTH QUADRANGLE
SHEET NUMBER 20 OF 46

117°00′00″ 116°57′30″ 116°55′00″ 116°52′30″
46°22′30″ 46°20′00″ 46°17′30″ 46°15′00″
R5W R4W
T35N T34N

Lewiston Orchards
Tammany School
Upper Tammany Cemetery
Tammany Creek
Short Canyon
TENMILE CANYON
Pigeon Roost Homestead
Big Bench Canyon
NEZ PERCE CO
ASOTIN CO
WASHINGTON
IDAHO
SNAKE RIVER

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 20

QUADRANGLE LOCATION

LEWISTON ORCHARDS SOUTH, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 20 OF 46

1	2	3
4		5
6	7	8

1 CLARKSTON
2 LEWISTON ORCHARDS NORTH
3 LAPWAI
4 ASOTIN
5 SWEETWATER
6 WEISSENFELS RIDGE
7 CAPTAIN JOHN RAPIDS
8 WAHA

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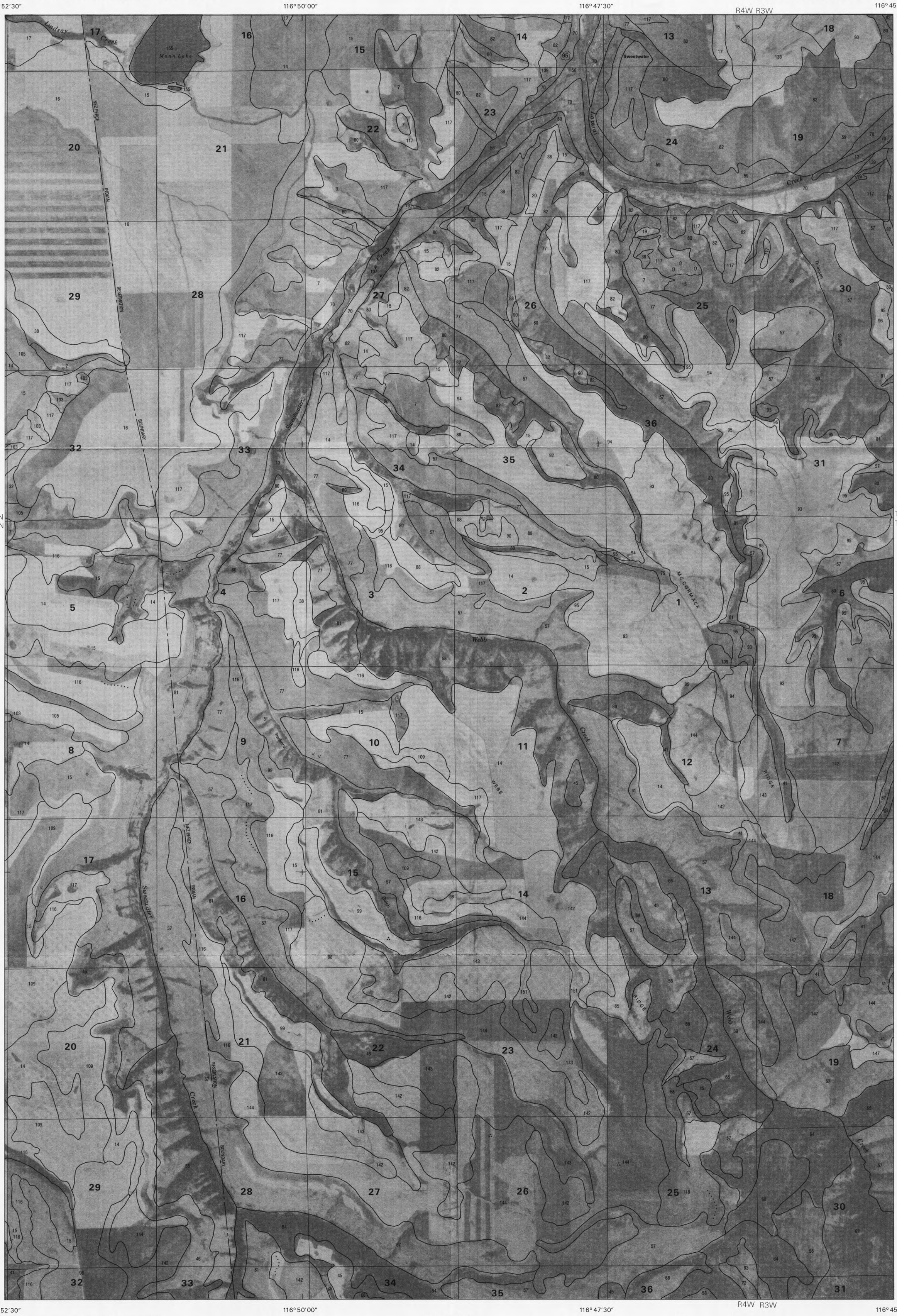
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
SWEETWATER QUADRANGLE
SHEET NUMBER 21 OF 46

116°52'30" 116°50'00" 116°47'30" 116°45'00"
46°22'30" 46°20'00" 46°17'30" 46°15'00"
R4W R3W
T35N T34N



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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 21

QUADRANGLE LOCATION

SWEETWATER, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 21 OF 46

1	2	3
4		5
6	7	8

1 LEWISTON ORCHARDS NORTH
2 LAPWAI
3 CULDESAC NORTH
4 LEWISTON ORCHARDS SOUTH
5 CULDESAC SOUTH
6 CAPTAIN JOHN RAPIDS
7 WAHA
8 WINCHESTER WEST

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CULDESAC SOUTH QUADRANGLE
SHEET NUMBER 22 OF 46

116°45′00″ 116°42′30″ 116°40′00″ R3W R2W 116°37′30″

46°22′30″ 46°20′00″ T35N T34N 46°17′30″ 46°15′00″

NEZ PERCE CO
LEWIS CO

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 22

QUADRANGLE LOCATION

CULDESAC SOUTH, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 22 OF 46

1	2	3
4		5
6	7	8

1 LAPWAI
2 CULDESAC NORTH
3 GIFFORD
4 SWEETWATER
5 REUBENS
6 WAHA
7 WINCHESTER WEST
8 WINCHESTER EAST

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
REUBENS QUADRANGLE
SHEET NUMBER 23 OF 46

116°37′30″ 116°35′00″ 116°32′30″ R2W R1W 116°30′00″

46°22′30″ 46°20′00″ 46°17′30″ 46°15′00″

T35N T34N

NEZ PERCE CO
LEWIS CO

Reubens

Sold Ridge Cem

Lapwai Creek
Rock Creek
Big Canyon Creek

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 23

QUADRANGLE LOCATION

1	2	3	1 CULDESAC NORTH 2 GIFFORD 3 PECK
4		5	4 CULDESAC SOUTH 5 FLETCHER 6 WINCHESTER WEST
6	7	8	7 WINCHESTER EAST 8 CRAIGMONT

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REUBENS, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 23 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
FLETCHER QUADRANGLE
SHEET NUMBER 24 OF 46

116°30′00″ 116°27′30″ 116°25′00″ 116°22′30″
46°22′30″ 46°20′00″ 46°17′30″ 46°15′00″
R1W R1E
T35N T34N

Sixmile Canyon
Big Canyon Creek
NEZ PERCE CO / LEWIS CO
Big Canyon Creek
Posthole Canyon
NEZ PERCE CO / LEWIS CO
Fletcher Cem
Holes Creek

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 24

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 GIFFORD
2 PECK
3 OROFINO WEST
4 REUBENS
5 MOHLER
6 WINCHESTER EAST
7 CRAIGMONT
8 COTTONWOOD NE

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FLETCHER, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 24 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
MOHLER QUADRANGLE
SHEET NUMBER 25 OF 46

116°22′30″ 116°20′00″ 116°17′30″ R1E R2E 116°15′00″

46°22′30″ 46°20′00″ 46°17′30″ 46°15′00″

T35N T34N

Creek Canyon NEZ PERCE CO LEWIS CO Big CENTRAL RIDGE Little Canyon Creek Creek Holes Creek Lapwai Creek Hollow Creek

18 17 16 15 14 13 18
19 20 21 22 23 24 19
30 29 28 27 26 25 30
31 32 33 34 35 36 31
6 5 4 3 2 1 6
7 8 9 10 11 12 7
18 17 16 15 14 13 18
19 20 21 22 23 24 19
30 29 28 27 26 25 30
31 32 33 34 35 36 31

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 25

QUADRANGLE LOCATION

1	2	3	1 PECK 2 OROFINO WEST 3 OROFINO EAST
4		5	4 FLETCHER 5 SIXMILE CREEK 6 CRAIGMONT
6	7	8	7 COTTONWOOD NE 8 NEZPERCE

INDEX TO ADJOINING 7.5 MAPS

MOHLER, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 25 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
SIXMILE CREEK QUADRANGLE
SHEET NUMBER 26 OF 46

116°15′00″ 116°12′30″ R2E 116°10′00″ 116°07′30″
46°22′30″ 46°20′00″ T35N T34N 46°17′30″ 46°15′00″

Fivemile Creek
Fivemile Creek
LEWIS CO
IDAHO CO
CLEARWATER RIVER
Sixmile Creek
Sixmile Creek
Coffee Creek

R2E R3E T34N

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SCALE 1:24000

1 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000
FEET
1 0 1
KILOMETERS
NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 26

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 OROFINO WEST
2 OROFINO EAST
3 RUDO
4 MOHLER
5 WOODLAND
6 COTTONWOOD NE
7 NEZPERCE
8 KAMIAH

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SIXMILE CREEK, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 26 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WOODLAND QUADRANGLE
SHEET NUMBER 27 OF 46

116° 07′ 30″ 116° 05′ 00″ 116° 02′ 30″ 116° 00′ 00″

46° 22′ 30″ 46° 20′ 00″ 46° 17′ 30″ 46° 15′ 00″

T34N

R3E

18 17 19 20 21 30 29 28 27 31 32 33 34 35

OREGON TRAIL

IDAHO CO

LEWIS CO

RIVER

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 27

QUADRANGLE LOCATION

1	2	3	1 OROFINO EAST 2 RUDO 3 WEIPPE NORTH
4		5	4 SIXMILE CREEK 5 WEIPPE SOUTH 6 NEZPERCE
6	7	8	7 KAMIAH 8 KOOSKIA

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WOODLAND, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 27 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CAPTAIN JOHN RAPIDS QUADRANGLE
SHEET NUMBER 28 OF 46

117°00′00″ 116°57′30″ 116°55′00″ R5W R4W 116°52′30″

46°15′00″ 46°12′30″ 46°10′00″ 46°07′30″

T34N T33N T33N T32N

Short Canyon Redbird Creek Crowers Canyon Thiessen Canyon Buffalo Draw Captain John Canyon

NEZ PERCE CO ASOTIN CO SNAKE RIVER IDAHO WASHINGTON Buffalo Rapids Captain John Rapids Captain John Ferry

34 35 36 31 1 6 12 7 18 19 30 31 2 1 6 11 12 7 10

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SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 28

QUADRANGLE LOCATION

CAPTAIN JOHN RAPIDS, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 28 OF 46

1	2	3
4		5
6	7	8

1 ASOTIN
2 LEWISTON ORCHARDS SOUTH
3 SWEETWATER
4 WEISSENFELS RIDGE
5 WAHA
6 BLACK BUTTE
7 LIMEKILN RAPIDS
8 FRYE POINT

INDEX TO ADJOINING 7.5 MAPS

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WAHA QUADRANGLE
SHEET NUMBER 29 OF 46

116°52′30″ 116°50′00″ 116°47′30″ 116°45′00″
46°15′00″ 46°12′30″ 46°10′00″ 46°07′30″
R4W R3W
T34N T33N T32N

NEZ PERCE INDIAN RESERVATION BOUNDARY

Redbird Creek · Mud Lake · Blue Lake · Waha · Waha Lake · West Fork · East Fork · Sweetwater Creek · Webb Creek · Madden Creek · John Creek · Captain John Creek · Browns Creek · Kruze Creek · Meadows Creek · Black Pine Campground

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 29

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 LEWISTON ORCHARDS SOUTH
2 SWEETWATER
3 CULDESAC SOUTH
4 CAPTAIN JOHN RAPIDS
5 WINCHESTER WEST
6 LIMEKILN RAPIDS
7 FRYE POINT
8 HOOVER POINT

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WAHA, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 29 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WINCHESTER WEST QUADRANGLE
SHEET NUMBER 30 OF 46

116°45′00″ 116°42′30″ 116°40′00″ R3W R2W 116°37′30″

46°15′00″ 46°12′30″ 46°10′00″ 46°07′30″

T34N T33N T33N T32N

NEZ PERCE CO
LEWIS CO

INDIAN RESERVATION BOUNDARY

Winchester
Lapwai Lake
WINCHESTER STATE PARK
Forest

Mission Creek
Webb Creek
Soldiers Meadow Reservoir

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 30

QUADRANGLE LOCATION

1	2	3	1 SWEETWATER 2 CULDESAC SOUTH 3 REUBENS 4 WAHA 5 WINCHESTER EAST 6 FRYE POINT 7 HOOVER POINT 8 WESTLAKE
4		5	
6	7	8	

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WINCHESTER WEST, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 30 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WINCHESTER EAST QUADRANGLE
SHEET NUMBER 31 OF 46

116°37′30″ 116°35′00″ 116°32′30″ R2W R1W 116°30′00″

46°15′00″ 46°12′30″ 46°10′00″ 46°07′30″

T34N T33N T32N

Winchester
WINCHESTER STATE PARK
Lapwai Lake
Lapwai Creek
Big Canyon Creek
Cold Spring Creek
Mud Springs Reservoir
Mason Butte
Talmaks Campground
North Fork Willow Creek
NEZ PERCE INDIAN RESERVATION BOUNDARY
LEWIS CO IDAHO CO
Morrow

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 31

QUADRANGLE LOCATION

WINCHESTER EAST, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 31 OF 46

1	2	3
4		5
6	7	8

1 CULDESAC SOUTH
2 REUBENS
3 FLETCHER
4 WINCHESTER WEST
5 CRAIGMONT
6 HOOVER POINT
7 WESTLAKE
8 KEUTERVILLE

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CRAIGMONT QUADRANGLE
SHEET NUMBER 32 OF 46

116° 30′ 00″ — 116° 27′ 30″ — 116° 25′ 00″ — R1W R1E — 116° 22′ 30″

46° 15′ 00″ — 46° 12′ 30″ — 46° 10′ 00″ — 46° 07′ 30″

T34N
T33N
T33N
T32N

Craigmont

Long Hollow Creek

Lawyer Creek

LEWIS CO
IDAHO CO

NEZ PERCE INDIAN RESERVATION BOUNDARY

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 32

QUADRANGLE LOCATION

1	2	3	1 REUBENS 2 FLETCHER 3 MOHLER
4		5	4 WINCHESTER EAST 5 COTTONWOOD NE 6 WESTLAKE
6	7	8	7 KEUTERVILLE 8 COTTONWOOD

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CRAIGMONT, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 32 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
COTTONWOOD NE QUADRANGLE
SHEET NUMBER 33 OF 46

116°22′30″ 116°20′00″ 116°17′30″ 116°15′00″
46°15′00″ 46°12′30″ 46°10′00″ 46°07′30″
R1E R2E
T34N
T33N

Long Hollow Creek
Lawyer Creek
LEWIS CO
IDAHO CO

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

MILES 1 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000

KILOMETERS 1 0 1

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 33

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 FLETCHER
2 MOHLER
3 SIXMILE CREEK
4 CRAIGMONT
5 NEZPERCE
6 KEUTERVILLE
7 COTTONWOOD
8 NEZPERCE SW

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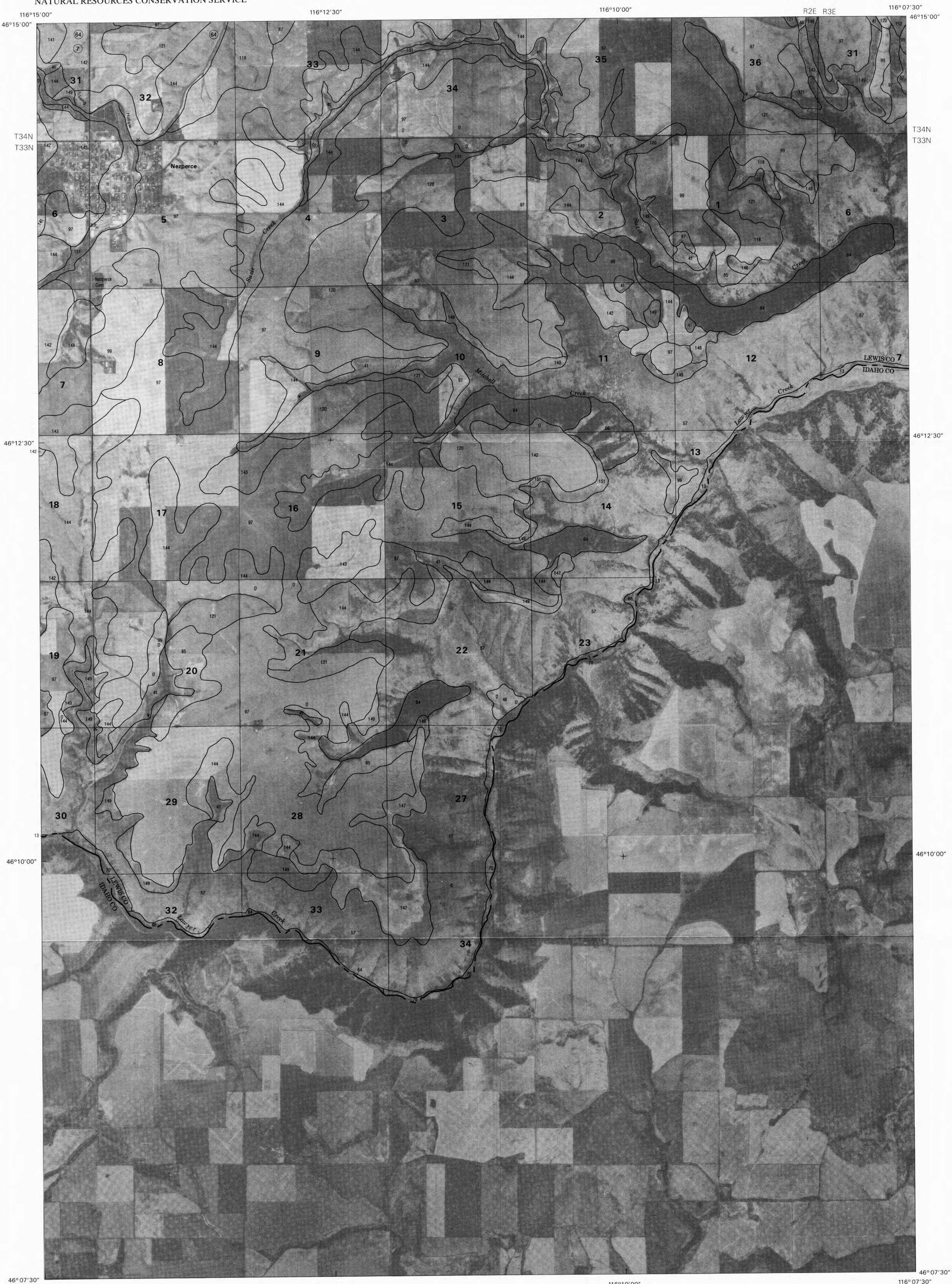
COTTONWOOD NE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 33 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
NEZPERCE QUADRANGLE
SHEET NUMBER 34 OF 46



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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 34

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 MOHLER
2 SIXMILE CREEK
3 WOODLAND
4 COTTONWOOD NE
5 KAMIAH
6 COTTONWOOD
7 NEZPERCE SW
8 NEZPERCE SE

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NEZPERCE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 34 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
KAMIAH QUADRANGLE
SHEET NUMBER 35 OF 46

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 35

QUADRANGLE LOCATION

KAMIAH, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 35 OF 46

1	2	3	1 SIXMILE CREEK 2 WOODLAND 3 WEIPPE SOUTH
4		5	4 NEZPERCE 5 KOOSKIA 6 NEZPERCE SW
6	7	8	7 NEZPERCE SE 8 STITES

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
LIMEKILN RAPIDS QUADRANGLE
SHEET NUMBER 36 OF 46

117°00'00" 116°57'30" 116°55'00" R5W R4W 116°52'30"

46°07'30" 46°05'00" 46°02'30" 46°00'00"

T32N
T31N

ASOTIN CO
NEZ PERCE CO
Captain Lewis Rapids
Billy Creek
Camp Creek
Limestone Point
Gold Hill
Dough Creek
Chimmney Creek
IDAHO
WASHINGTON
Middle Creek
Shoal Creek Rapids
SNAKE RIVER
Garden Creek
China Creek

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 36

QUADRANGLE LOCATION

1	2	3	1 WEISSENFELS RIDGE 2 CAPTAIN JOHN RAPIDS 3 WAHA 4 BLACK BUTTE 5 FRYE POINT 6 TEEPEE BUTTE 7 JIM CREEK BUTTE 8 WAPSHILLA CREEK
4		5	
6	7	8	

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LIMEKILN RAPIDS, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 36 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
FRYE POINT QUADRANGLE
SHEET NUMBER 37 OF 46

116°52′30″ 116°50′00″ 116°47′30″ 116°45′00″
46°07′30″ 46°05′00″ 46°02′30″ 46°00′00″
R4W R3W
T32N T31N

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000
FEET
1 0 1
KILOMETERS
NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 37

QUADRANGLE LOCATION

1	2	3	1 CAPTAIN JOHN RAPIDS 2 WAHA 3 WINCHESTER WEST 4 LIMEKILN RAPIDS 5 HOOVER POINT 6 JIM CREEK BUTTE 7 WAPSHILLA CREEK 8 RATTLESNAKE RIDGE
4		5	
6	7	8	

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FRYE POINT, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 37 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
HOOVER POINT QUADRANGLE
SHEET NUMBER 38 OF 46

116°45'00" 116°42'30" 116°40'00" 116°37'30"
46°07'30" 46°05'00" 46°02'30" 46°00'00"
R3W R2W
T32N T31N

Meadows Creek
Larabee Creek
Deer Creek
Deer Creek
Beer Creek Mine
NEZ PERCE CO
LEWIS CO
Hoover Point
Fork
Fork
Malones Creek
LEWIS CO
IDAHO CO
SALMON RIVER
IDAHO CO
Third Creek
Second Creek
First Creek
Eight Creek
Deer Creek

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 38

QUADRANGLE LOCATION

HOOVER POINT, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 38 OF 46

1	2	3
4		5
6	7	8

1 WAHA
2 WINCHESTER WEST
3 WINCHESTER EAST
4 FRYE POINT
5 WESTLAKE
6 WAPSHILLA CREEK
7 RATTLESNAKE RIDGE
8 BOLES

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UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WESTLAKE QUADRANGLE
SHEET NUMBER 39 OF 46

116°37′30″ 116°35′00″ 116°32′30″ R2W R1W 116°30′00″

46°07′30″ 46°05′00″ 46°02′30″ 46°00′00″

T32N
T31N

Malony Creek
Willow Creek
Deep Creek
LEWIS CO
IDAHO CO

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 39

QUADRANGLE LOCATION

1	2	3	1 WINCHESTER WEST 2 WINCHESTER EAST 3 CRAIGMONT
4		5	4 HOOVER POINT 5 KEUTERVILLE 6 RATTLESNAKE RIDGE
6	7	8	7 BOLES 8 MOUGHMER POINT

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WESTLAKE, IDAHO
7.5 MINUTE SERIES
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UNITED STATES
DEPARTMENT OF AGRICULTURE
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LEWIS AND NEZ PERCE COUNTIES, IDAHO
KEUTERVILLE QUADRANGLE
SHEET NUMBER 40 OF 46

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North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000 00

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 40

QUADRANGLE LOCATION

1	2	3	1 WINCHESTER EAST 2 CRAIGMONT 3 COTTONWOOD NE
4		5	4 WESTLAKE 5 COTTONWOOD 6 BOLES
6	7	8	7 MOUGHMER POINT 8 FENN

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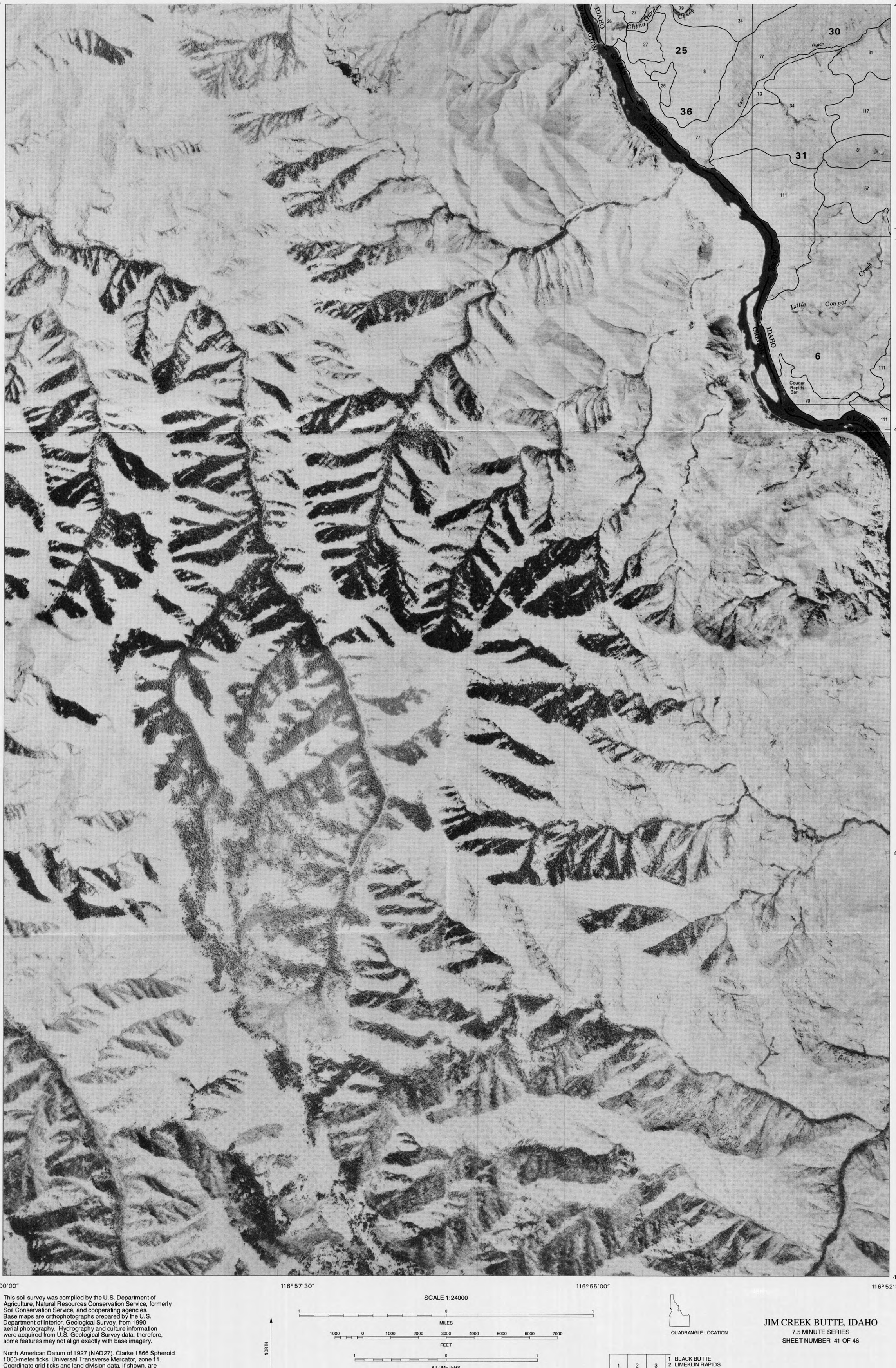
KEUTERVILLE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 40 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
JIM CREEK BUTTE QUADRANGLE
SHEET NUMBER 41 OF 46



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resources Conservation Service, formerly Soil Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1990 aerial photography. Hydrography and culture information were acquired from U.S. Geological Survey data; therefore, some features may not align exactly with base imagery.

North American Datum of 1927 (NAD27). Clarke 1866 Spheroid 1000-meter ticks: Universal Transverse Mercator, zone 11. Coordinate grid ticks and land division data, if shown, are approximately positioned. Digital data are available for this quadrangle.

SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 41

QUADRANGLE LOCATION

1	2	3	1 BLACK BUTTE 2 LIMEKLIN RAPIDS 3 FRYE POINT
4		5	4 TEEPEE POINT 5 WAPSHILLA CREEK 6 BILLY MEADOWS
6	7	8	7 POISON POINT 8 DEADHORSE RIDGE

INDEX TO ADJOINING 7.5 MAPS

JIM CREEK BUTTE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 41 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
WAPSHILLA CREEK QUADRANGLE
SHEET NUMBER 42 OF 46

116°52′30″ 116°50′00″ 116°47′30″ 116°45′00″
46°00′00″ 45°57′30″ 45°55′00″ 45°52′30″
R4W R3W
T31N T30N T29N

WAPSHILLA RIDGE
CRAIG MOUNTAIN
WAPSHILLA RIDGE
Wapshilla Creek
China Creek
Banks Creek
Cougar Creek
Big Creek
Cottonwood Creek
Prune Draw
Birch Creek
First Creek
Frenchy Creek
NEZ PERCE CO
IDAHO CO
WALLOWA CO
IDAHO
OREGON
SNAKE RIVER
SALMON RIVER

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SCALE 1:24000 20

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 42

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 LIMEKILN RAPIDS
2 FRYE POINT
3 HOOVER POINT
4 JIM CREEK BUTTE
5 RATTLESNAKE RIDGE
6 POISON POINT
7 DEADHORSE RIDGE
8 CACTUS MOUNTAIN

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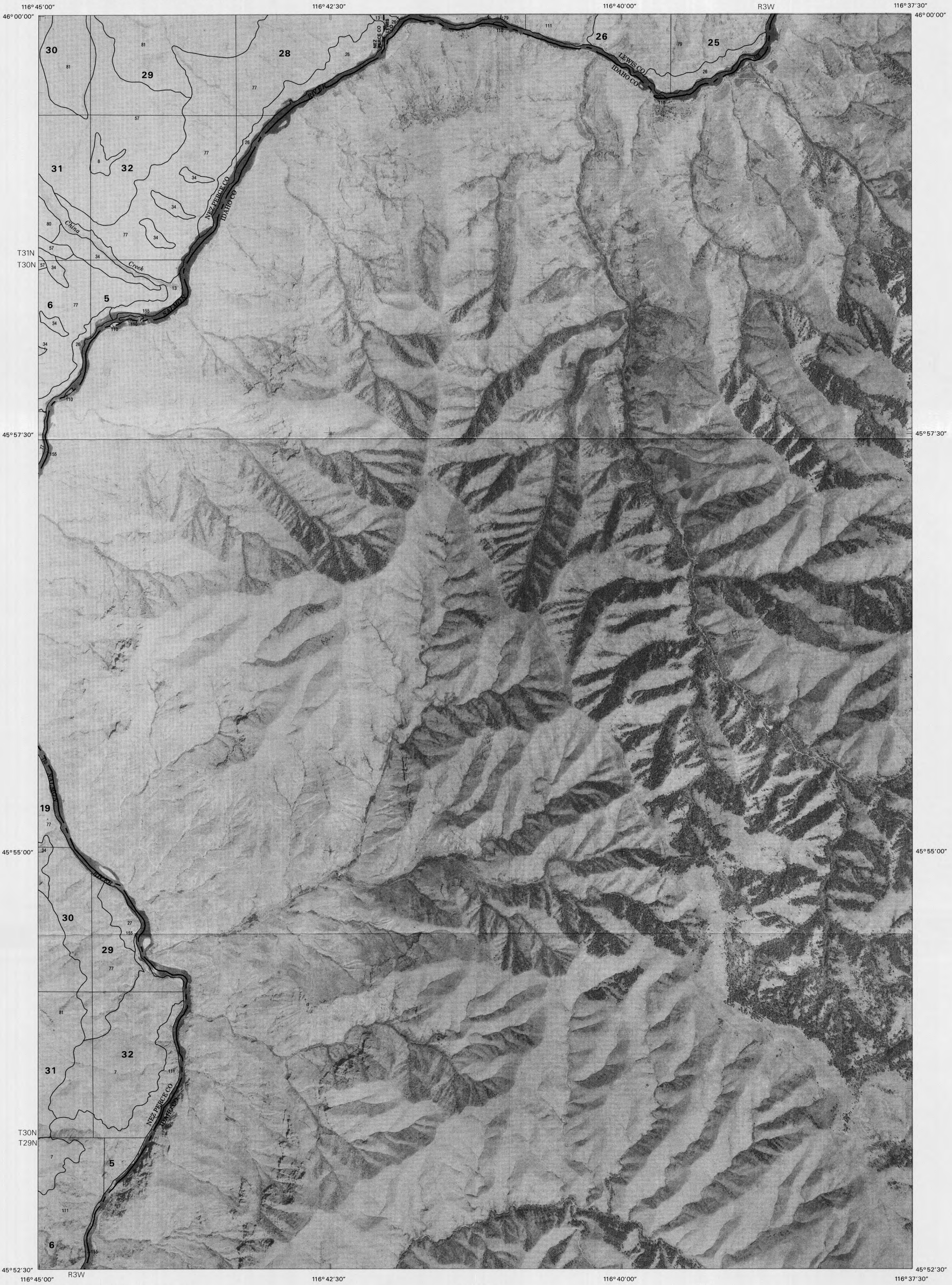
WAPSHILLA CREEK, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 42 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
RATTLESNAKE RIDGE QUADRANGLE
SHEET NUMBER 43 OF 46



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SCALE 1:24000

1 0 1 MILES

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 43

QUADRANGLE LOCATION

1	2	3	1 FRYE POINT 2 HOOVER POINT 3 WESTLAKE
4		5	4 WAPSHILLA CREEK 5 BOLES 6 DEADHORSE RIDGE
6	7	8	7 CACTUS MOUNTAIN 8 WOLF CREEK

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RATTLESNAKE RIDGE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 43 OF 46

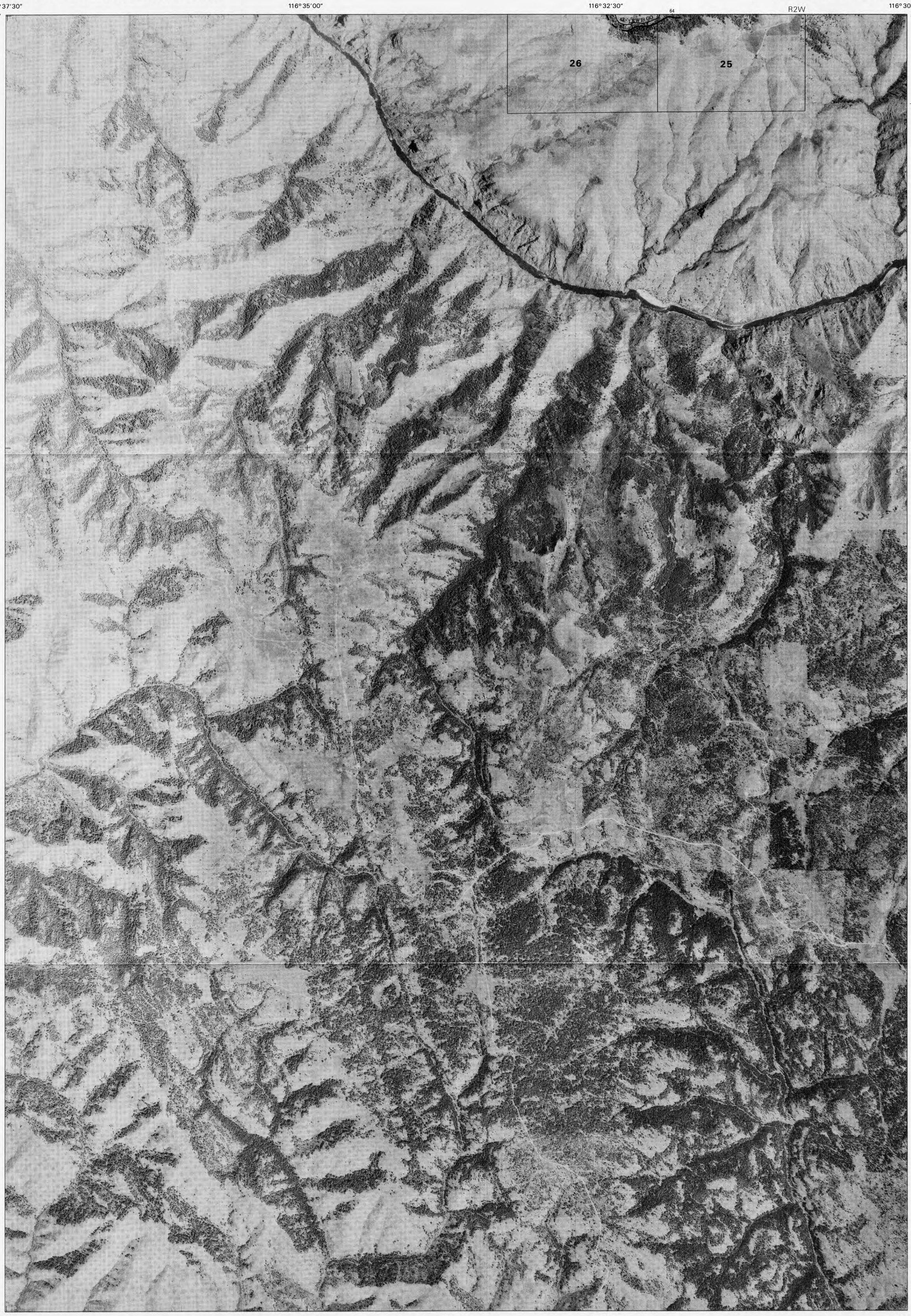
UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
BOLES QUADRANGLE
SHEET NUMBER 44 OF 46

116°37′30″ 116°35′00″ 116°32′30″ 116°30′00″
46°00′00″ 45°57′30″ 45°55′00″ 45°52′30″

R2W

T31N



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SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 44

QUADRANGLE LOCATION

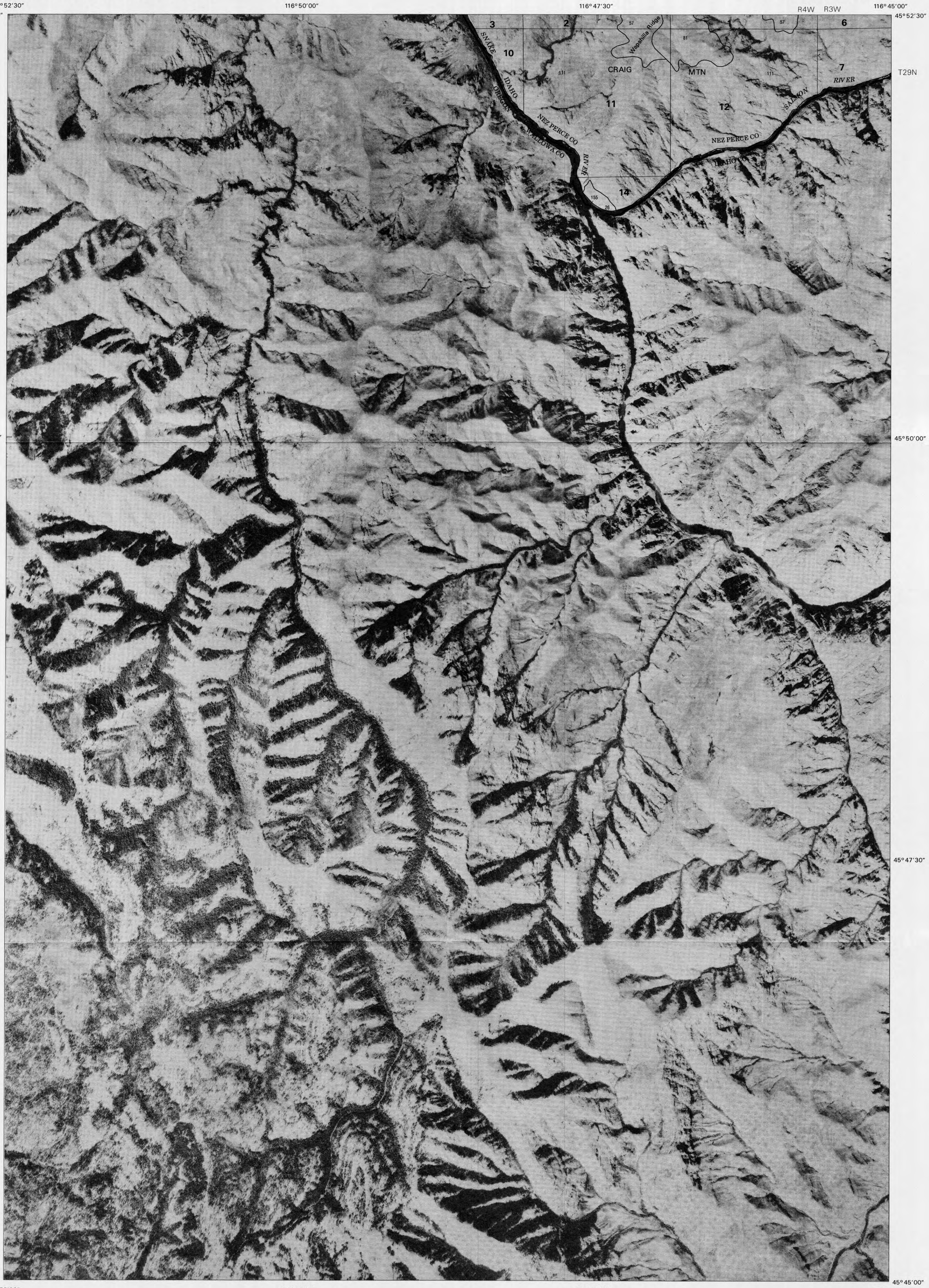
1	2	3	1 HOOVER POINT 2 WESTLAKE 3 KEUTERVILLE
4		5	4 RATTLESNAKE RIDGE 5 MOUGHMER POINT 6 CACTUS MOUNTAIN
6	7	8	7 WOLF CREEK 8 JOSEPH

INDEX TO ADJOINING 7.5 MAPS

BOLES, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 44 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
DEADHORSE RIDGE QUADRANGLE
SHEET NUMBER 45 OF 46



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SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 45

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 JIM CREEK BUTTE
2 WAPSHILLA CREEK
3 RATTLESNAKE RIDGE
4 POISON POINT
5 CACTUS MOUNTAIN
6 ZUMWALT
7 HAAS HOLLOW
8 FINGERBOARD SADDLE

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DEADHORSE RIDGE, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 45 OF 46

UNITED STATES
DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

LEWIS AND NEZ PERCE COUNTIES, IDAHO
CACTUS MOUNTAIN QUADRANGLE
SHEET NUMBER 46 OF 46

116° 45′ 00″ 116° 42′ 30″ 116° 40′ 00″ 116° 37′ 30″

45° 52′ 30″ 45° 50′ 00″ 45° 47′ 30″ 45° 45′ 00″

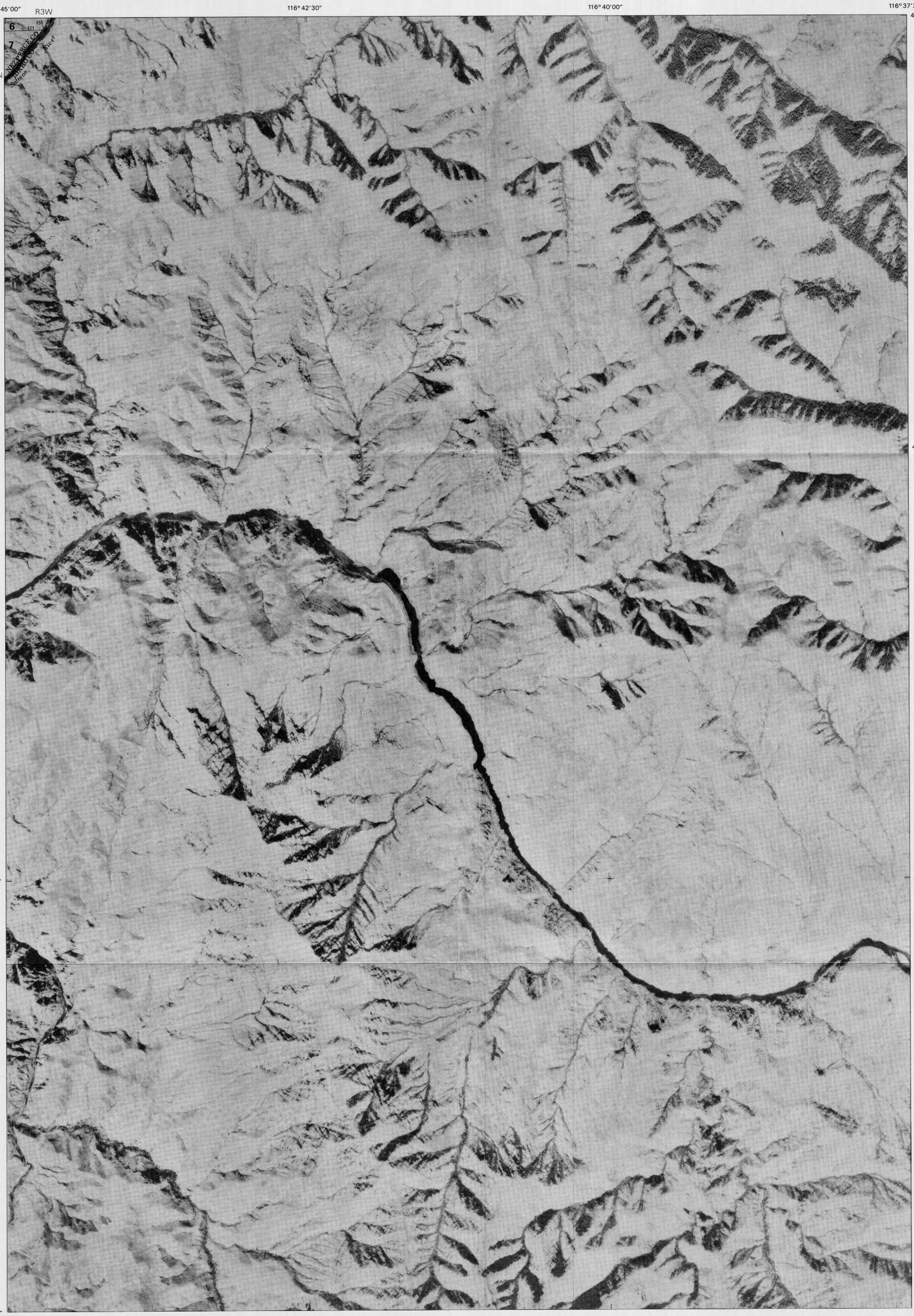
R3W

T4N

6 7

NEZ PERCE CO
IDAHO CO

Salmon River



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SCALE 1:24000

1 0 1
MILES

1000 0 1000 2000 3000 4000 5000 6000 7000
FEET

1 0 1
KILOMETERS

NORTH

LEWIS AND NEZ PERCE COUNTIES, IDAHO NO. 46

QUADRANGLE LOCATION

CACTUS MOUNTAIN, IDAHO
7.5 MINUTE SERIES
SHEET NUMBER 46 OF 46

1	2	3
4		5
6	7	8

1 WAPSHILLA CREEK
2 RATTLESNAKE RIDGE
3 BOLES
4 DEADHORSE RIDGE
5 WOLF CREEK
6 HAAS HOLLOW
7 FINGERBOARD SADDLE
8 LORD FLAT

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